~~SECRET~~ № 1

PROVISIONAL INTELLIGENCE REPORT

THE FERROUS METALLURGICAL INDUSTRY OF HUNGARY

CIA/RR PR-153
13 March 1957

CENTRAL INTELLIGENCE AGENCY

OFFICE OF RESEARCH AND REPORTS

~~SECRET~~

WARNING

This material contains information affecting the National Defense of the United States within the meaning of the espionage laws, Title 18, USC, Secs. 793 and 794, the transmission or revelation of which in any manner to an unauthorized person is prohibited by law.

Approved For Release 1999/09/02 : CIA-RDP79-01093A001200020009-5

OFFICE OF RESEARCH AND REPORTS

CONFIDENTIAL

Control Staff

LIMITED

Control Sheet

Supplementary Source References for

Series Number CIA/RR PR-153

Classification SECRET

Date of Document 13 Mar 57

Number of copies

Copy No.	Recipient	Date	Returned
1	AD/RR	25 Mar 57	12 apr 57
2, 3, 17	St/C file copies 25X1A9a	27 Mar 57	
25-27	ret'd by S/TD [redacted]	15 apr 57	
1, 3, 17, 25-27	Records Center	19 July 58	

CONFIDENTIAL

OFFICE OF RESEARCH AND REPORTS

Control Staff

CONFIDENTIAL

Control Sheet

Supplementary Source References for
Series Number CIA/RR PR-153

Classification ______

Date of Document 13 Mar 57

Number of copies ______

Copy No.	Recipient	Date	Returned
1	AD/RR	25 Mar 57	12 apr 57
2, 3, 17	St/C file copies 25X1A9a	27 Mar 57	
25-27	rct'd by S/TD [redacted]	15 apr 57	
1, 3, 17, 25-27	Records Center	19 July 58	

CONFIDENTIAL

PROVISIONAL INTELLIGENCE REPORT

THE FERROUS METALLURGICAL INDUSTRY OF HUNGARY

CIA/RR PR-153

(ORR Project 23.608)

NOTICE

The data and conclusions contained in this report do not necessarily represent the final position of ORR and should be regarded as provisional only and subject to revision. Comments and data which may be available to the user are solicited.

CENTRAL INTELLIGENCE AGENCY

Office of Research and Reports

FOREWORD

This report analyzes the ferrous metallurgical industry of Hungary as it existed before the October 1956 uprising. In addition to a description of the iron and steel industry, the report includes a discussion of resources and supplies of the principal raw and alloying materials essential to that industry.

Because of the limitations of source material, it has not been possible to establish patterns of product mix, of consumption, and of distribution or to relate the output of the industry to the gross national product of the country.

CONTENTS

Page

Appendixes

Tables

Map

THE FERROUS METALLURGICAL INDUSTRY OF HUNGARY*

Summary

The ferrous metallurgical industry of Hungary lacks an adequate domestic supply of raw materials, operates inefficiently and at very high cost, fails to provide for domestic requirements for finished steel products, and is heavily subsidized. In spite of these many deficiencies the maintenance of the industry is justified by the fact that it supplies the Hungarian economy with steel products which could not otherwise be obtained. Although the ferrous metallurgical industry of the USSR is highly developed and provides adequately for Soviet needs, it is not capable of fulfilling the requirements of the steel-short economies of the European Satellites. The ferrous metallurgical industry of Hungary, like those of the other European Satellites and Communist China, is necessary to the over-all economy of the Sino-Soviet Bloc.

Production of crude steel** in Hungary in 1955 was 1.629 million metric tons,*** 2.6 percent of the total production of crude steel in the Sino-Soviet Bloc, 11.5 percent of that of the European Satellites, and about equal to the annual production of one US steel plant of medium size. Of the basic raw materials required to produce 1.629 million tons of crude steel, Hungary supplied from indigenous resources only 23 percent of the iron ore and 10 percent of the metallurgical coke.

Production of iron ore in Hungary in 1955 was less than 1 percent of the total production of the Sino-Soviet Bloc. The known deposits of Hungarian iron ore are small and low in grade. At the rate of extraction planned for 1960, the deposits will be exhausted by 1970. Hungarian coking coal is high in ash and sulfur content and is not suitable for the production of high-grade metallurgical coke. The only steelmaking raw material in which Hungary is self-sufficient is

* The estimates and conclusions contained in this report represent the best judgment of ORR as of 1 December 1956.
** Crude steel includes steel ingots and steel for castings.
*** Tonnages are given in metric tons throughout this report.

manganese. The deposits of manganese are of low grade, but they supply the Hungarian industry and provide a surplus for export.

Hungary imports iron ore chiefly from the USSR, but some shipments come from Communist China, Bulgaria, and the Free World. Hungarian imports of metallurgical coke come principally from Poland and Czechoslovakia. Production of pig iron in Hungary does not meet the requirements of the ferrous metallurgical industry, and considerable pig iron is imported from the USSR. Of steelmaking raw materials and steel products, only manganese is exported by Hungary -- to the other European Satellites and to the USSR.

Investments in the ferrous metallurgical industry of Hungary in the First Five Year Plan (1950-54) amounted to 5.7 billion forints. Under the Second Five Year Plan (1956-60), investment in the industry is to be only 3 billion forints, a reduction of almost 50 percent. In spite of this reduction the Second Five Year Plan calls for substantial increases in production. The Plan sets a 1960 goal for production of pig iron of 1.41 million tons, a 66-percent increase over production in 1955; production of crude steel is to increase by 40 percent over the period of the Plan, to 2.24 million tons in 1960, and production of finished steel is to increase by 59 percent, to 1.4 million tons in 1960.

It appears that the planned increases in production of iron and steel in Hungary are to come from the increased efficiency to be achieved by the modernization, expansion, and better utilization of existing facilities. The Plan does not call for the construction of new plants. It is possible that the Second Five Year Plan goals for production of iron and steel can be reached even though investment funds have been sharply reduced. Modernization of existing facilities is much less expensive than construction of new plants, and modernized facilities operated efficiently could provide the planned increases. Also it is possible that investment funds can be used more effectively during the 1956-60 period than they were during the First Five Year Plan, when shifting political policies nullified the effect of large parts of the invested capital. Obviously, the success or failure of the ferrous metallurgical industry of Hungary will depend on the political developments following the October 1956 uprising in the country.

I. Introduction.

A. Position of the Industry.

Production of the small Hungarian iron and steel industry does not fulfill the apparent consumption requirements of the economy. Finished steel, as well as large quantities of raw materials for making both iron and steel, must be imported.

Production of crude steel in Hungary constitutes only 2.6 percent of the total Sino-Soviet Bloc production and 11.3 percent of that of the European Satellites. The production of crude steel in the Sino-Soviet Bloc in 1955 is shown in Table 1.

Table 1

Production of Crude Steel in the Sino-Soviet Bloc a/
1955

Country	Production (Million Metric Tons)	Percent of Total
USSR	45.3	72.5
Bulgaria	0.1	0.2
Czechoslovakia	4.5	7.2
East Germany	2.7	4.3
Hungary	1.6	2.6
Poland	4.4	7.0
Rumania	0.8	1.3
Communist China	2.9	4.6
North Korea	0.2	0.3
Total	62.5	100.0

a. 1/ (For serially numbered source references, see Appendix F.)

B. History and Development.

In 1914 when the iron and steel industry of Hungary had an adequate supply of materials, approximately 500,000 tons of crude steel were produced. Territorial changes following World War I deprived Hungary of the larger part of its former iron ore reserves and nearly 75 percent of its former coal deposits, the lack of which has handicapped the development of the industry. 2/

In 1938 the iron and steel industry of Hungary produced 647,000 tons of crude steel and a small range of finished steel products. During World War II the industry was operated by the Germans. Although some war damage was sustained, the most serious destruction resulted from the dismantling of plants, first by Germany and later by the USSR, both of whom shipped large quantities of equipment out of the country. 3/

The rehabilitation of the iron and steel industry began shortly after Hungary was proclaimed a republic in January 1946. The Three Year Plan (1947-49), which went into operation on 1 August 1947,* was designed to raise production of industry as a whole to the level of 1938, but goals for the iron and steel industry were slightly higher than the production rates of 1938. Planned investments for the metallurgical industry were scheduled at 390 million forints and included allocations for the expansion of the three principal plants, the Ozd Iron and Steel Plant at Ozd, the Lenin Metallurgical Works at Diosgyor, and the Matyas Rakosi Metallurgical Trust on Csepel Island near Budapest. In general, the plan was achieved, and targets in some branches of the iron and steel industry were overfulfilled and accomplished ahead of schedule. 4/

The development of a socialized iron and steel industry in Hungary began on 28 March 1948 with the nationalization of all industries which employed more than 100 persons. Except for a few small iron foundries, all iron and steel plants were placed under the control of the Hungarian government. 5/ (For descriptions of the ferrous metallurgical plants in Hungary, see Appendix A, and for the location of these plants, see the map, inside back cover.)

* From 1947 through 1949 the Hungarian fiscal year ran from 1 August through 31 July.

The First Five Year Plan (1950-54), which was announced early in 1949,* emphasized the expansion of heavy industry and provided for substantial increases in the production of the ferrous metals industry. Goals for 1954 were as follows: 2.25 million tons of iron ore, 950,000 tons of pig iron, 1.6 million tons of crude steel, and 1.1 million tons of rolled steel. Planned investments in the industry averaged approximately 1.1 billion forints annually, six times the annual investment rate of the Three Year Plan. 6/ The most important project of the First Five Year Plan was the construction of Hungary's first fully integrated steel plant at Mohacs, the building of which had actually started in 1947-48. The combine was to produce metallurgical coke from coal mined at nearby Pecs, and the blast furnaces were to operate on iron ore principally from Yugoslavia and from Krivoy Rog in the Ukraine, which was to be delivered by barge via the Danube River. Construction at Mohacs, which was close to the Yugoslav border, was abandoned as a result of the Tito-Cominform break in 1948. A new site was chosen at Dunapentele, on the Danube River just south of Budapest, and the building of the Sztalinvaros Metallurgical Combine began in late 1948. 7/

The original goals for 1954 under the First Five Year Plan were revised upward in 1951, when the Hungarian government made the decision to expand heavy industry. This policy decision for the iron and steel industry, together with the anticipated completion of the Sztalinvaros Metallurgical Combine which was expected to produce more crude steel in 1954 than was produced in all of Hungary in 1949, resulted in goals for pig iron and crude steel that were 35 percent higher than those set originally. The production goal for rolled steel probably was increased also, but neither that goal nor the revised goal for iron ore was announced. 8/

The revised Plan remained in effect until 1953, when a conflict developed in the Hungarian government over the disproportionate expansion between heavy industry and consumer goods industries. As a result, the goals of heavy industry were reduced for the remainder of the First Five Year Plan. In the iron and steel industry, the 1954 goal for pig iron was reduced approximately one-third to a level about 10 percent below that set by the original Plan in 1949, and the 1954 goal for crude steel was cut by approximately 23 percent of the 1955 revised Plan production. 9/ Neither of these goals was met in 1954; in fact, production was lower than in 1953.

* The fiscal year was changed to run from 1 January through 31 December to coincide with the fiscal years of other Soviet Bloc countries.

Approved For Release 1999/09/02 : CIA-RDP79-01093A001200020009-5

In Hungary, 1955 was a transitory period of preparation for the Second Five Year Plan (1956-60). Specific goals for the iron and steel industry were not announced, but it was announced that production was to be raised to the 1953 levels and that production costs were to be reduced. According to official claims the production of crude steel in 1955 was approximately 7 percent higher than in 1954. 10/

C. Plans.

The goals for the ferrous metals industry in Hungary under the Second Five Year Plan* were as follows: (1) a 166-percent increase in the production of pig iron in 1960 compared with 1955, 140 percent in production of crude steel, and 159 percent in production of rolled steel products; (2) by 1960, 33 percent of metallurgical coke requirements to be produced in Hungary, and 28 to 30 percent of iron ore requirements to be from domestic mines; (3) production costs to be reduced 16 percent, of which 9 percent is to be saved by the better use of raw materials, 5 percent from labor saving, and 2 percent in administrative expenses; and (4) technological practices to be improved, and production from existing facilities to be increased by the use of high-pressure tops on blast furnaces and by the use of oxygen for flame enrichment and carbon reduction in steelmaking furnaces. Investments in the Hungarian metallurgical industry are planned at 3 billion forints, 50 percent less than the 6 billion actually invested in the First Five Year Plan. 11/

A summary of the planned production of the three economic plans for pig iron, crude steel, and rolled steel products for 1947-56 and 1960 is given in Appendix C.

Long-range plans for economic coordination of the economies of the countries of the Sino-Soviet Bloc include the coordination of the Hungarian iron and steel industry with the steel industries of other Bloc countries. Primary goals consist of the specialization of each industry on that branch of production which can be developed most economically. These long-range plans will be administered by the Council of Mutual Economic Assistance (CEMA), which will coordinate economic plans, procure and allocate raw materials, standardize

* In the Second Five Year Plan, goals were stated at 165 percent for pig iron and 132 percent for crude steel, but the absolute figures in the Plan were calculated at the percentages included above.

products according to Soviet GOST (Gosudarstvennyy obshchesoyuznyy standart -- All-Union State Standard) specifications, and set prices. 12/

D. Organization and Administration.

Before the October 1956 revolt in Hungary, the iron and steel industry was under the direct administration of the Deputy Minister for Metallurgical Production in the Ministry of Metallurgy and Machine Industry. Since World War II the administrative organizations for the iron and steel industry had undergone a series of changes and regroupings at the ministerial level. The latest of these reorganizations took place in June 1953, when the Ministries of General Engineering, Medium Machinery, and Metallurgical Industries were merged into the Ministry of Metallurgy and Machine Industries. This Ministry is believed to have been responsible also for the administration of the iron ore mining industry, which had been under the Ministry of Mining and Power. The production of manganese is believed to have been under the Ministry of the Chemical Industry and Electricity. 13/

The National Council for Technical Development was created by the Council of Ministers in August 1955. Its functions included the direction and coordination of all industrial technical developments and the preparation of recommendations for the Council of Ministers on the more important aspects of such developments. Jozsef Mekis was appointed president of the National Council for Technical Development on 10 October 1955. 14/

II. Supply.

A. Pig Iron and Steel.

1. General.

According to official Hungarian announcements, 855,000 tons of pig iron, 1.629 million tons of crude steel, and 883,000 tons of rolled steel were produced in 1955. The 1955 production was 2.55, 2.52, and 1.8 times the 1938 production of pig iron, crude steel, and rolled steel, respectively. Planned and actual production of pig iron and steel in Hungary in 1938 and 1946-55 are shown in Table 2.*

* Table 2 follows on p. 8.

Table 2

Planned and Actual Production of Pig Iron and Steel in Hungary
1938 and 1946-55

Thousand Metric Tons

	Pig Iron		Crude Steel a/		Rolled Products	
Year	Planned	Actual b/	Planned	Actual b/	Planned	Actual b/
1938		335 c/		647 d/		470 e/
1946		N.A.		N.A.		N.A.
1947	360 f/	325 g/	600 f/	600 h/	360 f/	400 h/
1948	390 f/	400 h/	745 f/	750 h/	400 f/	400 h/
1949	430 f/	398 c/	800 f/	860 d/	450 i/	472 j/
1950	400 i/	443 j/	800 to 840 i/	1,048 d/	600 i/	508 j/
1951	400 i/	524 j/	900 i/	1,290 d/	650 i/	662 j/
1952	500 i/	579 j/	1,000 i/	1,459 d/	650 i/	792 j/
1953	650 i/	705 j/	1,200 i/	1,543 d/	800 i/	844 j/
1954						
(1949 Plan)	950 i/	820 j/	1,600 i/	1,491 j/	1,100 i/	819 j/
(1951 Revision)	1,280 g/		2,200 g/		N.A.	
(1953 Revision)	860 g/		1,680 g/		N.A.	
1955	N.A.	855 j/	N.A.	1,629 j/	N.A.	883 j/

a. Including open hearth and electric furnace steel.
b. According to official Hungarian announcements.
c. 15/
d. 16/
e. 17/
f. 18/
g. 19/
h. 20/
i. 21/
j. 22/

In Hungary the steelmaking practice is to use 70 percent pig iron in the open hearth charge, 23/ and the estimated 1955 production of pig iron, 855,000 tons, would not be adequate for the production of 1.629 million tons of crude steel. The domestic supply of pig iron must have been augmented by imports from the USSR. Announced production of rolled steel amounted to only 55 percent of crude steel and required the importation of approximately 80,000 tons of finished steel products to meet apparent consumption.

Although official statements frequently criticize individual plants and the industry as a whole for failures to meet production quotas, an analysis of the availability of raw materials and of productive capacity does not provide concrete evidence that refutes the official claims of production of pig iron, crude steel, and rolled steel.

2. Pig Iron and Iron and Steel Scrap.

a. Pig Iron.

Blast furnaces of the Hungarian iron and steel industry are claimed to have produced 855,000 tons of pig iron in 1955. Eighty percent of blast furnace capacity is concentrated in two plants, the Lenin Metallurgical Works at Diosgyor and the Ozd Iron and Steel Works, and the remainder in the Sztalinvaros Metallurgical Combine. According to official announcements, production goals were fulfilled each year of the First Five Year Plan -- except for 1954. Production of pig iron is supplemented by imports, principally from the USSR, but the amount of these shipments is not known. Planned and actual production of pig iron in Hungary in 1950-55 and 1960 are shown in Table 3.*

In 1956, 9 blast furnaces were producing pig iron at 3 iron and steel plants in Hungary.**

Hungarian blast furnaces are small and of conventional design. Capacities range from 180 to 500 tons per day, with furnaces rated at 250 tons or less accounting for 60 percent of total production. Until July 1956 there were no coke batteries in operation at plants producing pig iron.*** Prewar furnaces have been modernized but not

* Table 3 follows on p. 10.
** For a detailed description, see Table 11, Appendix C, p. 45, below.
*** See B, 3, below.

Approved For Release 1999/09/02 : CIA-RDP79-01093A001200020009-5

enlarged. Since the nationalization of the iron and steel industry in 1948 a 250-ton blast furnace at the Ozd Iron and Steel Plant, a 500-ton furnace at the Lenin Metallurgical Works, and a Soviet-designed 500-ton furnace at the Sztalinvaros Metallurgical Combine at Dunapentele have been constructed and represent approximately 14 percent of current capacity.*

Table 3

Planned and Actual Production of Pig Iron in Hungary
1950-55 and 1960

Thousand Metric Tons

Production	1950	1951	1952	1953	1954	1955	1960
Planned	400 a/	400 a/	500 a/	650 a/	860 b/ (1953 Revision)	N.A.	1,410 c/
Actual d/	443 e/	524 e/	579 e/	705 e/	820 e/	855 e/	

a. 24/
b. 25/
c. 26/
d. Official Hungarian figures.
e. 27/

Plans for increasing pig iron capacity to 1.41 million tons by 1960 include the following: (1) the construction of a second Soviet-designed 500-ton blast furnace at the Sztalinvaros Metallurgical Combine; (2) a Hungarian-designed blast furnace at Ozd, similar to the 500-ton furnace at the Sztalinvaros Metallurgical Combine; (3) the complete mechanization of all blast furnaces; (4) the gradual installation of high-pressure tops in furnaces; and (5) the increasing of production by 250,000 tons through the better preparation of iron ore. 28/

* Information is based on detailed plant studies available in CIA files.

b. Iron and Steel Scrap.

The shortage of iron and steel scrap in Hungary was a problem in the early years of the First Five Year Plan. Deficiencies in scrap developed when supplies created by World War II were exhausted. As shortages increased, inputs of pig iron into open hearth furnaces rose from 50 percent of the charge in 1949 to 70 and 75 percent in 1954 and 1955, respectively. 29/ Only sporadic imports of scrap iron and steel are known to have been received in recent years. The latest reported import of scrap occurred in 1952, when 137,000 tons were obtained abroad, including 125,000 tons from Turkey. The announced production of rolled and crude steel indicates that, in combination with available pig iron, sufficient scrap was generated by the steel mills and from manufacturing plants to provide the metallics needed to produce 1.629 million tons of crude steel.

3. Crude Steel.*

Approximately 60 percent of the steelmaking capacity of Hungary is concentrated in 2 plants in northeast Hungary, the Lenin Metallurgical Works at Diosgyor and the Ozd Iron and Steel Works at Ozd; 12 percent is in the Sztalinvaros Metallurgical Combine at Dunapentele, 40 kilometers south of Budapest; 15 percent is in the Matyas Rakosi Metallurgical Trust on Csepel Island at Budapest; and the remainder is in steel foundries at various locations. Approximately 80 percent of the steelmaking capacity is located in plants which have blast furnaces to provide hot metal. Goals for the production of crude steel** were achieved in each year of the First Five Year Plan, except in 1954, when production amounted to 89 percent of the target. Planned and actual production of crude steel in Hungary in 1950-55 and 1960 are shown in Table 4.***

Approximately 92 percent of crude steel production capacity is from open hearth furnaces and 8 percent from electric furnaces. Open hearth furnaces are small, the average capacity being 45 to 50 tons.

* For the location and capacity of steelmaking furnaces in Hungary, see Table 12, Appendix C, p. 46, below.

** Including both open hearth and electric furnace steel.

*** Table 4 follows on p. 12.

Table 4

Planned and Actual Production of Crude Steel in Hungary
1950-55 and 1960

Thousand Metric Tons

Production	1950	1951	1952	1953	1954	1955	1960
Planned	800 to 840 a/	900 a/	1,000 a/	1,200 a/	1,680 b/	N.A.	2,240 c/
Actual d/	1,048 e/	1,290 e/	1,459 e/	1,543 e/	1,491 e/	1,629 e/	

a. 30/
b. 31/
c. 32/
d. Official Hungarian figures.
e. 33/

Modernization and expansion of steelmaking facilities accomplished since the nationalization of the iron and steel industry in Hungary resulted in approximately 400,000 tons of additional capacity. Open hearth furnaces were enlarged, a 180-ton open hearth furnace replaced two 60-ton furnaces at the Lenin Metallurgical Works, 3 new 125-ton open hearths were built at the Sztalinvaros Metallurgical Combine, and several electric furnaces were installed in steel foundries.*

Plans to increase production of crude steel in Hungary to 2.24 million tons by 1960 include (1) the construction of two 125-ton open hearth furnaces at the Sztalinvaros Metallurgical Combine; (2) the construction of steel converters to produce 10 percent, 225,000 tons, of the total crude steel production; (3) the addition of a new open hearth shop at the Lenin Metallurgical Works; (4) the rebuilding of the open hearth furnaces at the Ozd Iron and Steel Works to 70-ton capacities; and (5) the use of oxygen in the making of steel. 34/ It is estimated that if these plans are accomplished, an increase in capacity of 775,000 tons will be realized annually -- 200,000 tons from the Sztalinvaros Metallurgical Combine, 225,000 tons from steel converters, and 350,000 tons from the enlarged furnaces at the Ozd Iron and Steel Works. This estimated increase does not include any production from the open hearth shop planned at Lenin or from increased production from the use of oxygen at existing facilities. Because this additional

* Information is based on detailed plant studies available in CIA files.

capacity is greater than that required to meet the 1960 goal of 2.25 million tons, the plan probably makes allowance for the retirement of some obsolescent facilities.

The procurement of an adequate supply of alloyed and special-quality steels has always been a problem of the Hungarian engineering industry. Although the iron and steel industry has sufficient electric furnace capacity, production of alloy and special steels is limited by the shortages of alloying metals, so that much of the electric furnace capacity is being used for standard grades of steel commonly produced in open hearth furnaces. 35/

4. Finished Steel.

Production of finished steel in Hungary does not meet apparent consumption requirements and is supplemented by imports, principally from the Free World.

Information on the production of finished steel, rolled products, and castings and forgings by category is lacking. Planned and actual production of rolled steel in Hungary for 1950-55 and 1960 are shown in Table 5.

Table 5

Planned and Actual Production of Rolled Steel in Hungary
1950-55 and 1960

Thousand Metric Tons

Production	1950	1951	1952	1953	1954	1955	1960
Planned	600 a/	650 a/	650 a/	800 a/	1,100 b/	N.A.	1,400 c/
Actual d/	508 e/	662 e/	792 e/	844 e/	819 e/	883 e/	

a. 36/
b. 1949 Plan.
c. 37/
d. Official Hungarian figures.
e. 38/

The inadequacy of Hungarian production of rolled steel in relation to the apparent consumption of the engineering and manufacturing industries appears to be partly, if not wholly, the result of the apparently low yield of rolled steel products obtained from steel ingots. Hungarian rolled steel production ranged from 48 to 55 percent of crude steel production in 1950-55, according to the official announcements, in contrast with yields of rolled products from crude steel of 70 percent or better in most steel producing countries. 39/ This loss in yield of 200,000 to 300,000 tons of rolled steel products exceeds the known volume of imports.

The Second Five Year Plan of Hungary provides for a production of rolled and crude steel in a ratio of 62.5 percent -- an improvement, but still below normal yields. The assumption that production of crude steel includes steel for castings, the production of which is not reported, would account for only a small part of the discrepancy. The explanation for the discrepancy may lie in some peculiarity in Hungarian statistical procedures, particularly in recent years, or in the conversion or sale of Hungarian ingots outside the country. There is, however, no evidence of the latter practice in significant quantity.

The shortage of finished steel products in Hungary is aggravated further by the failure of the iron and steel industry to produce the types of steel needed to fulfill the requirements of steel consumers. 40/ The pressure to meet planned goals and the policy of basing wages on the achievement of production norms may have contributed to the industrywide practice of concentrating on items easily produced rather than on the types of steel in demand.

The quality of Hungarian steel products deteriorated during the First Five Year Plan. In 1954 the rate of mill rejects increased 150 percent, only 83 percent of the rolled products produced met the specification of consumers, and stocks of unmarketable steel products were estimated to have amounted to one-third of total production of rolled steel. 41/

Information on Hungarian foreign trade in finished steel is fragmentary, and known imports in recent years, particularly from Soviet Bloc countries, are believed to be considerably less than the actual total. In 1951 the USSR supplied most of the 200,000 tons of finished steel imported, but since 1951 known imports originated principally in Western Europe. Estimated imports of semifinished and finished steel by Hungary in 1954-55 are shown in Table 6.*

* Table 6 follows on p. 15.

Table 6

Estimated Imports of Semifinished and Finished Steel by Hungary a/
1954-55

Thousand Metric Tons

Country	1954	1955
USSR	Negligible	Negligible
Austria	30.0	32.0
Belgium-Luxembourg Economic Union	8.0	8.8
Czechoslovakia	Negligible	Negligible
East Germany	N.A.	N.A.
France	3.3	15.0
Italy	Negligible	2.0
Japan	0	N.A.
West Germany	15.0	19.0
UK	Negligible	2.0
US	0	N.A.
Total	56.3	78.8

a. 42/

A brief description of facilities for producing finished steel in Hungary is given in Table 13,* Appendix C.

With only a few exceptions, finishing facilities of the Hungarian iron and steel industry are obsolescent. Since the nationalization of the industry, some improvements have been made, including the mechanization of rolling mills at the Ozd Iron and Steel Plant and the addition of a structural mill, a large-diameter pipe mill, and two steel foundries.** One of the principal objectives of the industry, however, continues to be the modernization of existing finishing facilities.

The Second Five Year Plan in Hungary calls for the completion of a plate and sheet mill for the Sztalinvaros Metallurgical Combine, which

* P. 51, below.
** Information is based on detailed plant studies available in CIA files.

will increase the output of plates 110 percent and of sheets 160 percent within 5 years. A tube mill is also to be installed at the Lenin Metallurgical Works. Production of sheet is to be increased from 79,000 tons in 1955 to 196,000 tons in 1960, which the Hungarians claim will be sufficient to take care of requirements. 43/

B. Basic Raw Materials.

1. Iron Ore.

a. Reserves.

The major part of the iron ore reserves which once belonged to Hungary were lost in 1920 under the Treaty of Trianon to Czechoslovakia and Rumania. Some mines in Czechoslovakia, however, remained under Hungarian private ownership until after World War II.

Currently, domestic production of iron ore in Hungary is principally from three mines in the Rudabanya district north of Miskolc and near the Czechoslovak border. (See Table 9,* Appendix B.) Proved and probable reserves at Rudabanya, the only commercially important deposit in Hungary, do not exceed 21 million tons, of which about 9 million tons have been developed for working. 44/ The iron content is highly variable, the best ore containing only 22 to 31 percent iron and the poorer ores as little as 7 percent iron. Much of the ore contains considerable amounts of barite and silica, both of which are detrimental to efficient blast furnace operation. The physical structure also varies widely, ranging from large, coarse lumps to powdery fines. As mining progresses in depth, the quality of the ore is expected to decline. Limited quantities of limonite containing 32 to 36 percent iron are located in the vicinity of Pecs and may be mined for smelting at the Sztalinvaros Metallurgical Combine.

Intensive prospecting and exploration for new iron ore deposits have a continuing high priority but thus far appear to have been unsuccessful. In 1951 the Ministry of Mining and Power, which controlled the mining of iron ore, announced the discovery of new iron ore deposits in the Matra Mountains, northeast of Budapest, which were estimated to contain 20 million tons of ore. 45/ This discovery, however, is questionable. No development or mining activity in that area has been reported, and it is unlikely that a significant discovery would remain undeveloped for long.

* P. 40, below.

b. Production.

Estimated output of iron ore in Hungary in 1955 was 353,000 tons, about 1.3 times the 1938 production (see Table 7*), but it accounted for only 20 percent of apparent consumption in that year, compared with 42 percent in 1938. 46/ The production of iron ore in 1956 is planned to exceed that of 1955 by 12 percent. 47/

Failure to meet plans and to keep pace with growing domestic requirements reflects not only the lack of adequate facilities for ore processing but also a failure to recognize the limitations of the meager iron ore resources of Hungary. The First Five Year Plan called for the production of 1 million tons of iron ore in 1950, more than 3 times that of 1949, and for an expansion to 2.25 million tons by 1954. 48/ Such a rate of mining would have exhausted Hungary's known reserves by the end of 1960.

The Second Five Year Plan calls for production sufficient to meet 28 to 30 percent of the iron ore requirements of Hungary by 1960. 49/ Based on the planned production of pig iron of 1.41 million tons in 1960 50/ and an estimated average as-mined iron content of 30 percent, production of ore in 1960 would have to be about 1.4 million tons. Assuming a gradual approach to the planned production by 1960 and continued annual production at the same level, it is estimated that presently known reserves of iron ore will near depletion by 1970.

Apart from raising home production of iron ore, the Second Five Year Plan recognizes the need for developing adequate means of preparation and concentration of iron ore. To implement this phase of the program, construction of a large ore dressing plant at Rudabanya has been resumed and is scheduled for completion by the beginning of 1958. 51/ Another ore dressing plant now under construction at the Sztalinvaros Metallurgical Combine is expected to begin operations late in 1956. 52/ Some domestic ores will be processed at Sztalinvaros, but the plant is intended primarily for the agglomeration and blending of imported Soviet ores. Elementary ore dressing facilities are believed to be in operation at the Lenin Metallurgical Works at Diosgyor and at the Ozd Iron and Steel Works.

---

* P. 19, below.

c. Foreign Trade.

The inadequacy of domestic iron ore supply has compelled Hungary to rely heavily on imports since before World War II. For the extent of Hungary's imports of iron ore for 1938 and 1948-56, see Table 7.*

The USSR has been the principal source of iron ore for Hungary since 1948. In recent years, some ore has been imported on an irregular basis from Free World nations, including Sweden, Norway, India, Portuguese India, and Iran; and additional supplies have been received from Communist China, Bulgaria, Czechoslovakia, and Poland. Because Czechoslovakia and Poland also must import a large portion of their iron ore requirements, shipments from these countries probably represent transshipments. Combined imports from the West and from the Sino-Soviet Bloc, exclusive of the USSR, probably account for less than one-third of the total imports of Hungary.

The dependence of Hungary on ore from the USSR is a direct consequence of the withdrawal of Yugoslavia from the Cominform in 1948. Before World War II, Yugoslavia and Hungarian-owned mines in Czechoslovakia supplied most of the imports of Hungary. When control of the mines in Czechoslovakia was lost, Yugoslavia became the principal source of imported ore, until Tito's break with the Cominform. From 1948 to 1954, when minor shipments reportedly were resumed, 53/ Yugoslav ore was not available to Hungary. The resumption of Yugoslav ore shipments on a major scale would increase considerably the Hungarian supply of iron ore. The supply of iron ore in Hungary in 1938 and 1948-56 is shown in Table 7.*

2. Manganese Ore.

Production of manganese in Hungary in 1955 amounted to 280,000 tons 54/ of unprocessed ore, about 110,000 tons of concentrates with 40 percent metallic content. This production is small compared with that of the major world producers. Hungary ranked fourth among Soviet Bloc producers in tons of manganese ore mined. Only the USSR, Rumania, and Czechoslovakia produced more. Manganese produced in Rumania and Czechoslovakia, however, is not suitable for the production of ferromanganese. Domestic requirements in Hungary take approximately 60 percent of annual production, leaving the

---

* Table 7 follows on p. 19.

Table 7

Supply of Iron Ore in Hungary
1938 and 1948-55

Thousand Metric Tons

Year	Estimated Production	Estimated Imports	Apparent Consumption
1938	279.0 a/	419.0 b/	698.0
1948	276.5 c/	880.0 d/	1,156.5
1949	339.0 a/	570.0 b/	909.0
1950	369.0 a/	693.5 b/	1,008.5
1951	311.0 a/	828.5 b/	1,139.5
1952	316.0 a/	931.0 b/	1,247.0
1953	359.0 a/	1,148.5 b/	1,507.5
1954	428.0 a/	1,339.5 b/	1,767.5
1955	353.0 a/	1,440.5 b/	1,793.5

a. 55/
b. Estimate based on metallics (iron content) required to produce the announced tonnages of pig iron, allowing for iron content contained in domestic ores (30 percent iron content) and using an iron content of 52 percent (USSR shipping ore average) for imported ore.
c. 56/
d. 57/

remainder for export, principally to Czechoslovakia. (For production, apparent consumption, and the apparent amount available for stocks and export, see Table 16,* Appendix C.)

a. Reserves.

Although deposits of manganese ore are scattered throughout Hungary, only those at Urkut, the principal producer, and Epleny, in Western Hungary, are of commercial importance. In 1952, total proved and probable reserves suitable for industrial use were

* P. 59, below.

estimated to have been 5 million to 10 million tons of oxide ore at Urkut and at the almost depleted deposit at Epleny. 58/ Since that time, however, the discovery of deposits at Urkut containing 30 million to 50 million tons of 18 to 20 percent manganese carbonate ore have been reported. 59/ New deposits of oxide ore of more than 500,000 tons at Urkut and 300,000 tons at Epleny have been reported. 60/ If proved, these new discoveries will increase Hungarian reserves substantially. (See Table 9,* Appendix B, for detailed data on manganese reserves.)

b. Production.

Production of manganese ore in 1955 is estimated to have been 280,000 tons, of which 250,000 tons were produced at Urkut 61/ and 30,000 tons at Epleny. 62/ The ore at Urkut contains 18 to 26 percent manganese and was beneficiated to 80,000 tons of 40 percent manganese concentrates. The ore produced from the Epleny deposit averages 28 percent manganese and was shipped before processing.

The quality of mined ore in Hungary has deteriorated considerably during the past 10 years, and a large amount of gangue and fines are extracted with the ores. 63/ This resulted in a large loss of manganese in the tailings during the beneficiation process. In 1953, hydrocyclones for reconcentrating the tailings were installed, and an additional recovery of 15 to 20 percent (a total of 70 to 75 percent) of the manganese content of the raw ore was reported. 64/ Smelting problems were encountered because of excessive fines, silica, and moisture, and at times the reconcentrated material was refused by the steel industry. 65/ Attempts at drying and agglomerating the tailings have met with only moderate success. 66/

In order to preserve the oxide ores for production of ferromanganese, the Hungarian government planned to mine the newly discovered carbonate ores for blast furnace use, with a cutback in the production of oxide. It is estimated that 50,000 tons of oxide ore per year would be sufficient to meet internal requirements for production of ferromanganese. Long-range plans call for an annual production of 400,000 tons of the carbonate ore. 67/ To implement this plan, the Second Five Year Plan provides for the completion of a new concentrating plant for processing carbonate manganese ores at the Sztalinvaros Metallurgical Combine. 68/

* P. 40, below.

Approved For Release 1999/09/02 : CIA-RDP79-01093A001200020009-5

c. Consumption.

The average consumption of manganese in terms of metallic content per ton of steel ingots produced in Hungary is about 49 kilograms (kg),* compared with 54 kg in the Ukrainian SSR and only 6 kg** in the US. The production of pig iron, which requires an estimated 42 kg of metallic manganese per ton of pig iron produced, accounts for most of the Hungarian consumption of manganese. In part, this reflects the dependence of Hungary on the low-manganese ore from Krivoy Rog and on the high-sulfur coke from the Donets. The Hungarian practice of blending domestic high-manganese iron ore (2.9 percent manganese) from Rudabanya with lean Soviet ore (0.06 to 0.2 percent manganese), however, effects a considerable saving of manganese ore in the blast furnace charge.

The use of powdery manganese ore and fines in the blast furnaces, which results in appreciable losses in the flue dust, is another reason for the high manganese consumption of Hungary. Moreover, manganese specifications for pig iron are higher in Hungary and the USSR than in the US. Conversion pig iron in Hungary contains 2 to 3.5 percent manganese, compared with a range in the US of from 0.5 to 2 percent manganese. 69/

Consumption of manganese ferroalloys in Hungary for deoxidation, desulfurization, and alloying additions in steelmaking is about the same as in major steel producing countries, 5 to 7 kg of contained manganese per ton of steel ingots produced.

d. Foreign Trade.

Since 1952, approximately 40 percent of production of manganese in Hungary reportedly has been exported, mainly to Czechoslovakia, 70/ but no annual data on these or other exports of manganese are available for recent years. Manganese ore appeared as an export item in a Hungarian trade agreement with East Germany in 1953. 71/ Because East Germany is deficient in manganese, it is likely that Hungary still exports this commodity to East Germany. Hungarian imports of manganese are limited to small shipments of either high-grade metallurgical and chemical ores to supplement its own lower grade product or manganese imported for transshipment. 72/

* For methodology, see Appendix D.
** Consumption in the US does not include manganese recovered from the use of open hearth slags.

3. Metallurgical Coke.

In May 1956, Hungary had no facilities for the production of metallurgical coke of a satisfactory quality. The first byproduct coke battery began operations on 9 July 1956. In 1955, however, gas coke plants produced an estimated 75,000 tons of coke, which were mixed with the better grades of the 1 million tons of metallurgical coke imported during the year. An aim of the Second Five Year Plan is to produce 33 percent of metallurgical coke requirements by 1960 -- based on the 1960 production goal for pig iron, approximately 500,000 tons of coke. 73/

a. Reserves of Coking Coals.

Reserves of coking coals in Hungary are limited to the bituminous deposits of the Pecs and Komlo areas, located in the Mecsek Mountains. These reserves are estimated at approximately 33 million tons, enough to last for about 40 years at the rate of consumption of coke planned for 1960. Because of high-ash and high-sulfur content, these reserves are not considered to be good coking coals. Blending with better imported coking coals will be necessary to produce a satisfactory product for blast furnace use.

If the ferrous metallurgical industry in Hungary is successful in developing a low-temperature, metallurgical-grade coke from brown coal at the Kazincbarcika coke plant, which is still to be constructed, the good-quality brown coal reserves of 313 million tons located near Tatabanya and Dorog could be considered as coking coal reserves. This contemplated process is similar to the process used at Lauchhammer, in East Germany, which has been only moderately successful in producing metallurgical-grade coke. 74/

b. Production.

Production of metallurgical-grade coke in Hungary throughout the First Five Year Plan was meager, reaching a total of only 75,000 tons in 1955, all of which was produced in the gas coke plants at Pecs and Budapest. 75/

The goal of the Second Five Year Plan calls for an annual coke production by 1960 of approximately 500,000 tons, 33 percent of metallurgical coke requirements. 76/ To implement this plan, the first of two byproduct coke batteries to be erected at the

Sztalinvaros Metallurgical Combine was completed and began production in July 1956. 77/ During the remainder of 1956 this battery is scheduled to produce 70,000 tons of metallurgical coke, and full capacity is rated at 280,000 tons annually. 78/

The battery at Sztalinvaros will be charged with coal from the Pecs and Komlo areas, delivered with 1.9 percent sulfur content after treatment. 79/ The use of coke produced from such high-sulfur coal will result in a poor grade of pig iron, unless the local coals or coke are blended with better grades of coal or coke imported from other countries.

c. Foreign Trade.

For most of its metallurgical coke supply, Hungary has always depended on imports, which in 1955 amounted to 93 percent of requirements. During 1950-55 the main suppliers of metallurgical coke have been Poland and Czechoslovakia. Throughout this period, annual imports of coke from Czechoslovakia have remained constant, at approximately 300,000 tons a year. Shipments from Poland in 1950-51 were about 200,000 tons annually, rising to approximately half a million tons annually in 1952-55.

Beginning in 1953 and continuing through 1955, Hungary obtained substantial imports of metallurgical coke from West Germany and Belgium. Estimated Hungarian imports of metallurgical coke, by country of origin, in 1950-55 are shown in Table 8.*

C. Alloying Materials.

With the exception of vanadium (which is derived in small quantities from Hungarian bauxite deposits), manganese, and silicon, Hungary has no indigenous deposits of alloying minerals. Almost all other alloying additives for its small alloy steel industry are imported from Soviet Bloc countries, and only small quantities come from the West. Production of ferroalloys is limited to ferromanganese and ferrosilicon.

The USSR is the principal supplier of alloying materials. Although chromite is obtained from Albania, and molybdenum and tungsten concentrates are imported from Communist China, some alloying materials are obtained intermittently from the Free World, frequently at prices

* Table 8 follows on p. 24.

considerably higher than world prices. The flow of imports from the West and from the Soviet Bloc is irregular and does not fill Hungarian requirements for most alloying materials. (Estimated production and imports of alloying materials for which data are available are shown in Table 17.*)

Table 8

Estimated Hungarian Imports of Metallurgical Coke by Country of Origin a/ 1950-55

Thousand Metric Tons

Country of Origin	1950	1951	1952	1953	1954	1955
Belgium				15	99	36 b/
Czechoslovakia	301	301	300	310	320	320
Poland c/	214	314	430	510	404	500 d/
West Germany				35	212	166 e/
Others						0
Total f/	520	620	730	870	1,040	1,050

a. 80/
b. January-July shipments.
c. Including some unknown quantities of Polish coke contracted for by the USSR for resale to Hungary.
d. No figures are available, but Hungary is known to have received coke from Poland. These shipments are estimated to be in the same magnitude as in the previous 3 years to meet the coke requirements for the production of pig iron.
e. January-August shipments.
f. Because of rounding, figures do not add to the totals shown.

* Appendix C, p. 60, below.

1. Ferroalloy Ores, Concentrates, and Metals.

Chrome ore, used in Hungary principally in the production of chrome-magnesite refractories for domestic use and for export, 81/ is imported from Albania, which was the sole source of supply from 1950 to 1955. Two Free World sources were developed in 1955, when trade agreements with Yugoslavia and Iran provided for imports of unspecified amounts of chrome ore. 82/ Chrome for metallurgical rather than refractory use is imported as ferrochrome, principally from Sweden and the USSR through 1953 and, in part, from Great Britain in 1954. 83/

It is known that through 1954 the USSR furnished cobalt used in steels produced in Hungary for Soviet account. Total requirements, including those for Soviet steel, are about 50 tons annually. Known imports including sporadic shipments of cobalt, cobalt oxide, and cobalt chemicals from the West have never reached this level. It is not known whether or not the deteriorating supply situation has been alleviated by shipments against a Soviet credit granted late in 1954. 84/

The reluctance of the USSR to furnish a larger portion of Hungarian cobalt requirements appears to apply to nickel as well. In 1952, 80 percent of the nickel imports were from the USSR. 85/ Despite the growing demand of Hungary for cobalt and the increased difficulty of obtaining supplies from the West, there is substantial evidence that Soviet shipments have remained constant and in 1955 may have amounted to no more than 50 percent of the total imports. Shipments from the West consist of nickel, nickel cathodes, nickel sulfates, permalloy (80 percent nickel), and chrome-nickel wire. 86/

Molybdenite concentrate (75 percent molybdenite) and wolfram concentrate (65 percent wolfram trioxide) are imported from Communist China, which replaced the USSR as the principal supplier in 1952. Because Hungary has no known conversion facilities, these concentrates are processed elsewhere in Europe, possibly in East Germany, 87/ and provide most of the approximately 50 tons of molybdenum (metallic content) and all of the 200 tons of tungsten used annually in Hungary. Additional small quantities of metallic molybdenum are imported occasionally from the West. 88/

2. Ferroalloys.

Production of ferromanganese and ferrosilicon in Hungary is almost sufficient to meet domestic requirements. The Second Five Year Plan (1956-60) provides for facilities to produce ferrotitanium from "red mud," a byproduct of Hungarian production of alumina. 89/

Blast furnace ferromanganese is produced at the Ozd Iron and Steel Plant at Ozd, at the Lenin Metallurgical Works at Diosgyor, and probably at Sztalinvaros. 90/ Since 1950, domestic production has supplied all of the requirements of Hungary except for small amounts of special grades. The First Five Year Plan provided for the construction of a special ferromanganese plant near Urkut, but this plant was not built. A special ferromanganese furnace, presumably electric, was to be installed in the open hearth shop at the Lenin Metallurgical Works at Diosgyor late in 1955. 91/

Since 1949, ferrosilicon has been produced -- mainly at the Hungarian Ferrosilicon Factory at Zagyvarona and, in minor quantities, at the Felsogalla Carbide Plant. In 1947 the Felsogalla plant was the principal producer of ferrosilicon in Hungary, but its facilities have been shifted almost entirely to the production of calcium carbide. The Zagyvarona plant, which was constructed in 1939 and dismantled by the Germans during World War II, was reopened in 1948 with one electric furnace. A second furnace was added in 1952, and two additional furnaces were installed in 1953. 92/ Since 1954, domestic production of ferrosilicon (45 percent silicon) is believed to have been sufficient to meet requirements for all but higher grade ferrosilicon (75 to 90 percent silicon), which is imported, presumably for use in the production of silicon steels for electrical sheets. Sweden and West Germany have supplied most of the imports since 1951. Earlier sources were Norway, Switzerland, Italy, and the USSR.

III. Technology.

About 50 percent of present blast furnace capacity and 25 percent of crude steel capacity of the ferrous metallurgical industry of Hungary were installed during the First Five Year Plan.* Much of the new equipment is of Soviet design, and although units are relatively small, they compare favorably with similar equipment in other countries.

* Information is based on detailed plant studies available in CIA files.

Finishing facilities, with few exceptions, are obsolescent and are operated inefficiently, and modernization is a primary current objective. 93/

Considerable emphasis has been given to the need for improvement in the technological practices of the Hungarian industry. At a November meeting of the Central Leadership of the Hungarian Workers' Party, it was pointed out that the increased utilization of local basic materials, the reduction of the coke consumption rate, the better utilization of production facilities, and the more complete exploitation of ores must be accomplished.

The status of blast furnace operation has been considerably below that of the USSR and Communist China. The iron and steel industry of Hungary averages only 500 tons of pig iron per day from a 700-cubic-meter blast furnace, a coefficient of utilization of about 1.4 cubic-meters of effective volume required to produce 1 ton of pig iron. The national coefficient in Communist China is 0.877 cubic meter and in the USSR 0.8 cubic meter. To date there are no indications that Hungarian blast furnaces are equipped for high top pressure or employ moisture control of the blast. Both of these practices are to be inaugurated during the Second Five Year Plan. In most industries which maintain a high level of blast furnace technology -- including the US, the USSR, and Communist China -- the rate of coke consumption per ton of pig iron has been decreasing, but in Hungary the rate has been increasing. Current consumption of 1.2 tons of coke per ton of pig iron greatly exceeds the average of 0.95 ton attained in the USSR in 1955. 94/

Hungarian technology of steelmaking and processing also has been considered to be behind that of the USSR and other Bloc countries. The use of oxygen to increase production in open hearth and electric furnaces is to be adopted during the 1956-60 period. The introduction of the oxygen converter method of making steel is planned also and is expected to account for 225,000 tons of steel production annually by 1960. 95/

The industry has accomplished little in the fields of stainless, high-temperature alloys and special-quality steels, even though electric furnace capacity exists to produce these items.

Exploitation of "red mud," a byproduct of the separation of alumina from bauxite which contains up to 30 percent iron oxide, if proved technically and economically sound, may provide up to 50,000 tons of iron oxide a year. The presence of 20 to 24 percent of titanium in the residue may lend economic feasibility to this development. 96/

IV. Investments, Costs, and Prices.

A. Investments.

The iron and steel industry in Hungary was allotted 160 million forints* for capital investments during the Three Year Plan (1947-49), 32 percent of total capital investments for heavy industry. In addition, 100 million forints were made available for renovation of existing plants. Investment allotments were to be distributed as follows 97/:

	Million Forints
Ore preparation and increasing production of pig iron	35.5
Increasing production of crude steel	22.0
Rolling mills	14.0
Tube plants	31.0
Forge shops	7.0
Iron foundries	23.0
Steel foundries	26.0
Other	1.5

During the First Five Year Plan, 5.7 billion forints, 31.2 percent of all investments in industry, were spent in the development of the iron and steel industry. This amount was 2.2 percent of the Hungarian announced national net materials product** of 265.5 billion forints for the period, based on fixed 1949 prices. 98/

Although the Hungarian Second Five Year Plan provides for a 4-percent increase over the preceding plan for heavy industry, the allocation to the metallurgical industry is reduced 50 percent to 3 billion forints, 9 percent of total investments in industry. The share to be allocated to the iron and steel industry is not known, but in the First Five Year Plan the investments in nonferrous metallurgy amounted to only 5 percent of total investments in metallurgy. 99/

* Official rate of exchange of 1 forint equals US $0.085.
** Net materials product is the value of final goods and services, excluding the value of personal services but including transportation and those services employed in the production of goods.

In spite of the drastic reduction in investment funds, the projected increase in the tonnage output of pig iron and crude steel in Hungary scheduled in the First and Second Five Year Plans are approximately the same. In the absence of a detailed breakdown of the projects covered by the two Plans and of accounting practices followed in the the commitment of funds, no satisfactory explanation can be offered for this apparent discrepancy. A partial explanation lies in the facts that during the current Plan substantial increases in production may be realized from improved raw materials, the cost of which may be included in the allocations to the mining industry, and that technical improvements require less investment than new construction. It is also possible that all the funds required for the Sztalinvaros Metallurgical Combine, by far the most expensive project in the industry's program of expansion, may be charged against the First Five Year Plan, although construction was not completed, as scheduled, during that period. 100/

B. Costs and Prices.

The composition and operating methods of the iron and steel industry of Hungary are indicative of high costs. Raw materials are reported to comprise 80 percent of the cost of the industry, in contrast to 45 to 50 percent in the US and 55 percent in Czechoslovakia. Further evidence of high costs was provided by a group from the Austrian steel industry which visited Hungary in the spring of 1956 and reported that the costs of producing iron and steel in Hungary were the highest in the world. 101/

The reduction of costs of producing raw materials and iron and steel products in Hungary has been an objective of both Five Year Plans. The first plan called for a reduction of costs of 20 to 25 percent. Prime costs of producing pig iron, however, instead of decreasing, rose 8.3 percent in 1953 and 14.3 percent in 1954 above those of 1952. 102/ The plan for the reduction of costs in the ferrous metallurgical industry during the Second Five Year Plan is not specified. It is directed, however, that industry as a whole is to effect a reduction of 16 percent, 9 percent of which is to come from the more efficient use of raw materials. 103/

The practice of subsidization is confirmed by the fact that the high cost of materials is not offset entirely by low wages. Pricing policies in Hungary may be similar to those which were in effect in East Germany before April 1955, when up to 50 percent of the costs of the iron and steel industry was covered by subsidies. 104/

Prices of iron and steel products, published for planning purposes by the Hungarian National Planning Office (see Table 14*), indicate that the prices for hot rolled products such as bars may be underpriced in relation to the price of steel ingots. If the cost of ingots to the finishing mills is the same as the quoted planning price of 910 forints per ton and the ingot to finished bar yield is the same as the apparent over-all yield of finished steel (55 percent), the cost of ingots alone would amount to 1,656 forints, compared with the planning price of 1,300 forints per ton of hot rolled bars. Even at the finished steel yield of 72 percent normally attained in most steel industries, the cost of ingots per ton of bars would be 1,264 forints. This would allow only 2.8 percent of the selling price for conversion costs (exclusive of the cost of steel), compared with an estimated 25 to 30 percent in the US.

A series of forint-to-dollar ratios, based on Hungarian planning prices and US lease prices, for ironmaking and steelmaking raw materials and finished steel products shows considerable variation (see Table 14*). The forint-to-dollar ratios for iron ore and hot rolled bars approximate the official rate of exchange, but those for sheet and strip are higher, indicative of the scarcity of flat rolled products and the fact that those items are produced on old, outmoded handmills, a high-cost operation.

V. Capabilities, Vulnerabilities, and Intentions.

A. Capabilities.

The ferrous metallurgical industry of Hungary is handicapped by inadequate resources of raw materials, inefficient economic planning, and poor management. In view of the chronic shortages of steel that have existed among the European Satellites since the initiation of programs of industrialization, the industry provides support for Hungarian manufacturers with supplies of steel which otherwise might not be available. The relatively high costs of these supplies, a result of the necessity of importing raw materials and of inefficient processing, are offset to an undetermined extent by subsidization.

Although the allocation of investment funds to the industry was drastically reduced in the Second Five Year Plan, the planned goals probably will be reached because of increases in production resulting

* Appendix C, p. 53, below.

from the introduction of modern technology, more efficient operating practices, and additional facilities provided for in the Plan.

B. Vulnerabilities.

The principal vulnerability of the ferrous metallurgical industry of Hungary is its dependence on imported raw materials. Most of the coking coal and metallurgical coke is procured from Czechoslovakia and Poland, and more than 1 million tons of iron ore are obtained annually from Krivoy Rog in the Ukraine. Stopping the flow of these essential raw materials would seriously cripple the industry.

High costs resulting from an inadequate raw material base and from inefficient planning and operating methods constitute an economic vulnerability. Inefficient planning and operating methods may improve under more stable political conditions.

C. Intentions.

The planned increase in production of iron and steel in Hungary appears to be commensurate with the planned expansion of heavy industry. The reduction in investment funds allocated to the industry and the absence of plans for major expansion during the Second Five Year Plan suggest an intention to deemphasize the development of the iron and steel industry and to place a greater reliance on imports of finished steel in future years. Further evidence of such intentions may be provided if decisions are reached by the Council of Mutual Economic Assistance (CEMA) for Hungary to specialize on the production of certain types of finished steel and to depend on imports to meet requirements of other finished steel products.

Unless Hungary begins to accumulate larger-than-economic stocks of raw materials, direct indications of military intentions are not likely to be provided by observation of the Hungarian iron and steel industry. If the information were available, a study of the product mix might indicate an excessive output of items associated with military use, but such evidence would be identified more readily by analyses of budgetary and military activities.

APPENDIX A

FERROUS METALLURGICAL PLANTS IN HUNGARY IN 1956*

1. Borsodnadasd Rolling Mill at Borsodnadasd (48°08' N - 20°15' E).

The Borsodnadasd Rolling Mill produces special steels, steel sheet, and dynamo and transformer sheet.

Two 1.5-ton electric furnaces produce an estimated 3,000 tons of special steels annually. Finishing facilities include a sheet mill and a pickling shop. Production in 1956 is estimated at 100,000 to 120,000 tons of steel sheet.

2. Ganz Railroad Car and Machine Factory at Kobanya (47°28' N - 19°09' E).

The Ganz Railroad Car and Machine Factory is one of the largest producers of locomotives, railroad cars, diesel engines, and machinery in Hungary. It contains an iron foundry, a steel foundry, and a forge shop.

Steelmaking facilities consist of at least 2 electric furnaces, a 3-ton Italian furnace and an 8-ton Italian furnace installed in 1953, facilities which have an estimated total annual production of 11,000 tons of steel.

The forge shop produces approximately 4,000 tons of forgings annually.

3. Felsogalla Carbide Plant (Also Known as the Felsogalla Coal Distilling Chemical Plant, the Tatabanya Carbide Plant, and the Felsogalla Ferroalloy Plant) at Felsogalla (47°32' N - 18°26' E).

The Felsogalla Carbide Plant, established in 1938-39, was the principal producer of ferrosilicon in Hungary in 1947. Its facilities have been shifted almost entirely to the production of calcium carbides, and the production of ferrosilicon in 1956 cannot be estimated.

---

* The information in this appendix was taken from detailed plant studies which are available in CIA files.

4. Gheorghiu Dej Shipyard (Formerly Known as the Ganz Shipyard) at Budapest (47°30' N - 19°05' E).

The Gheorghiu Dej Shipyard contains a steel foundry for the making of steel castings. There are an unknown number of electric furnaces for making crude steel.

5. Kobanya Iron and Steel Foundry (Formerly Known as the Hubert and Sigmund Steel and Metal Parts Plant) at Kobanya (47°28' N - 19°09' E).

The Kobanya Iron and Steel Foundry is a small plant producing special alloy steel castings, such as magnet cores, cylinder linings, and metalworking tips for the engineering industry of Hungary.

The steel foundry contains two electric furnaces of unknown size which produce steel for castings.

6. Lang Engineering Works at Budapest (47°30' N - 19°05' E).

The Lang Engineering Works produces a wide range of machinery and equipment, including locomotives, railroad cars, and diesel engines. It contains an iron foundry, a steel foundry, and a forge shop. A precision centrifugal casting machine was installed in late 1955.

The furnaces for producing steel are not known, but the 1949-50 production plan called for production of 20,000 tons of steel.

7. Lenin Metallurgical Works (Also Known as the Hungarian State Iron and Steel Works, the Diosgyor Metallurgical Works, and "Mavag") at Diosgyor (48°06' N - 20°41' E).

The Lenin Metallurgical Works, one of the two largest in Hungary, produces pig iron, open hearth and electric furnace steel, iron and steel castings, forgings, structurals, rails, sheet and plate, and nuts and bolts. Two 350-cubic-meter blast furnaces and one 700-cubic-meter blast furnace have a total annual capacity of 299,200 tons of pig iron. Seven open hearth furnaces -- three 40-ton, one 70-ton, two 80-ton, and one 180-ton -- have a total annual capacity of 432,500 tons of crude steel. There are also 5 electric furnaces -- one 2-ton, one 3-ton, one 6-ton, and two 10-ton -- which have a total annual capacity of 31,000 tons. Total crude steel capacity is estimated at 463,200 tons per year.

Finishing facilities include a blooming mill, a 3-high billet and structural mill installed in January 1955, a universal mill, a bar mill, a medium structural and rail mill, a steel foundry, a forge shop, and a nut and bolt shop.

8. Lorinci Rolling Mill at Pestszentlorinc (47°26' N - 19°12' E).

In 1950 an obsolescent, 3-high heavy plate mill was moved from the Lenin Metallurgical Works in Diosgyor to the site of the former Liptak Factory, which was abandoned in 1919. It was planned that the Lorinci Rolling Mill, the only producer of heavy plate in Hungary, would operate only until the plate mill at the Sztalinvaros Metallurgical Combine went into operation. Production in 1956 is estimated to have been 100,000 tons.

9. Matyas Rakosi Metallurgical Trust (Also Known as M.R. Kohaszat, the Csepel Island Steel Plant, and Formerly Known as the Manfred Weiss Metal Works) at Csepel, an Island Near Budapest (47°25' N - 19°05' E).

The Manfred Weiss Metal Works was in operation before World War I and was one of the largest industrial combines in Hungary. With nationalization of industry, the works was divided into two separate organizations, the Matyas Rakosi Metallurgical Trust and the Matyas Rakosi Engineering Trust.

The Matyas Rakosi Metallurgical Trust produces crude steel, steel castings, plate, skelp, welded and seamless pipes and tubes, structurals, and wire products.

Five 35- to 40-ton open hearth furnaces have a total production capacity of 175,400 to 234,000 tons of steel. Five electric furnaces -- one 3-ton, one 5-ton, two 6-ton, and one 9-ton -- have a total annual capacity of 29,000 tons. Total crude steel capacity is estimated at 204,000 tons to 263,000 tons annually.

Finishing facilities include a blooming and structural mill, a 3-high bar mill, 2 plate and skelp mills, 2 pipe and tube mills, 2 steel foundries, and a forge shop. A cold drawn tube mill is scheduled for completion by the end of 1957.

10. Ozd Iron and Steel Plant (Formerly Known as the Rimamurany-Salgotarjan Ironworks, Ltd.) at Ozd (48°13' N - 20°18' E).

The Ozd Iron and Steel Plant, one of the two largest iron and steel plants in Hungary, did not suffer any damage during World War II. The Russians, however, dismantled equipment in 1945-46, including a structural mill which had been installed by the Germans. A blast furnace was added, the open hearth shop was enlarged, and a sintering plant was built during the Three Year Plan. The First Five Year Plan provided funds for modernization and for enlarging open hearth furnaces. The Second Five Year Plan contains funds for building a new open hearth shop and for other improvements. The plant produces pig iron, crude steel, iron and steel castings, bars, billets, structural shapes, rails, rods, wire, plate, sheet, and hoop steel.

Five blast furnaces, with daily capacities ranging from 180 to 250 tons, have an annual capacity of 377,400 to 391,000 tons of pig iron. Twelve open hearth furnaces, each with a daily capacity of 35 to 40 tons, have a total annual capacity of 409,000 to 463,000 tons of crude steel. No electric furnaces are known to be installed.

Finishing facilities include a single-stand, 2-high reversing blooming mill; a single-stand, 2-high reversing structural and rail mill; a single-stand, 2-high reversing plate mill; a single-stand, 3-high medium rolling mill; a fine rolling mill; a wire mill with eight 2-high stands; a hoop mill; and a steel foundry.

11. Wilhelm Pieck Railroad Car and Machine Works (Formerly Known as the Hungarian Railroad and Machine Works and as the Magyar Wagon Works) at Gyor (47°41' N - 17°38' E).

The Wilhelm Pieck Railroad Car and Machine Works is one of the largest machine building plants in Hungary. It was approximately 90 percent destroyed during World War II.

Two foundries in the plant produce iron and steel castings. The old foundry contains 2 small open hearth furnaces and 4 electric furnaces -- one 4-ton, two 2-ton, and one 1-ton. The new foundry, completed in December 1954, has one 3-ton electric furnace. The plant has an annual production capacity of 14,000 tons of crude steel.

12. Red Star Tractor Works (Also Known as the Hofherr, Schrantz, Clayton, and Shuttleworth Machinery Plant) at Kispest (47°27' N - 19°08' E).

The Red Star Tractor Works is an important producer of agricultural equipment. It contains an iron foundry and two steel foundries. Two small open hearth furnaces and two 3-ton electric furnaces have a total annual capacity of 15,700 tons of crude steel.

13. Salgotarjan Steel Goods Factory at Salgotarjan (48°07' N - 19°48' E).

The Salgotarjan Steel Goods Factory was in operation before World War I. The First Five Year Plan provided 75 million forints for modernization and for the installation of new wire-drawing machines, a nail machine, a laboratory, and a modern cold rolling mill.

The plant produces electric furnace steel, wire, nails, ingot molds, light iron and steel castings, forgings, and stampings.

The steel foundry contains an unknown number of electric furnaces. Finishing facilities include a wire-drawing plant, a nail shop, a galvanizing shop, and a forge shop and steel foundry. A steel-pickling plant was being installed in February 1956.

14. Soroksar Iron and Steel Foundry at Soroksar (47°24' N - 19°07' E).

The Soroksar Iron and Steel Foundry, which by 1960 is to be the largest and most modern foundry in Hungary, contains an unknown number of electric furnaces for the production of steel for castings.

15. Sztalinvaros Metallurgical Combine (Also Known as the Dunapentele Metallurgical Combine) at Sztalinvaros (46°58' N - 18°56' E).

In 1948, plans were made to build an integrated steel plant at Mohacs on the Danube River, close to the Yugoslav border. The primary objective of the First Five Year Plan was that the Mohacs Steel Combine was to operate on coal from the nearby Pecs mines and on iron ore from Yugoslavia and the Krivoy Rog mines in the Ukraine, which was to be delivered by barge via the Danube River. Construction was abandoned when Tito broke with the Cominform in 1948, and a new site was selected near Dunapentele, about 65 kilometers south of Budapest on the Danube.

Completion of the Sztalinvaros Metallurgical Combine was to raise the steel production of Hungary to 2.2 million tons by the end of 1954. Progress has been slow, and schedules for completion of installations have not been met. Two coke batteries of 55 ovens each are planned, one of which went into production in July 1956. Four blast furnaces were planned, two of which were to be completed by the end of 1954. Only one 700-cubic-meter blast furnace is in operation, with an estimated annual capacity of 170,000 tons. Eight open hearth furnaces, with a total planned production of 1 million tons per year, are to be completed by the end of 1960. Only 3 open hearth furnaces, with an annual production capacity of 100,000 tons each, are in operation; the third furnace was fired on 21 April 1956. An unknown number of electric furnaces are in operation in the steel foundry. Two Soviet-designed rolling mills -- a plate mill and a fine sheet mill -- are to be in operation during the Second Five Year Plan.

16. Zagyvarona Ferroalloy Plant (Also Known as the Salgotarjan Ferroalloy Plant and as the Hungarian Ferrosilicon Plant) at Zagyvarona (48°07' N - 19°51' E).

The Zagyvarona Ferroalloy Plant, established in 1938-39 and largely destroyed during World War II, was reopened in 1948. With four electric furnaces, it is the principal producer of ferrosilicon in Hungary. Production capacity is not known.

APPENDIX B

RESERVES, MINES, AND PROCESSING FACILITIES FOR IRON ORE AND MANGANESE ORE IN HUNGARY 1956

Table 9

Mineral	Location (Coordinates)	Estimated Reserves (Metric Tons)	Mineral Content	Geology	Mining Operations	Processing
Iron ore	Rudabanya District (including Tornaszentandras), $48^{\circ}20'$ N - $20^{\circ}36'$ E	21 million tons a/*	Siderite, which averages 22 to 23 percent iron. Limonite, which averages 30 percent iron. The iron content varies widely. b/	Irregular mass of originally spathic iron ore (siderite). Transformed to brown iron ore to depth of 60 to 80 meters. Deposit covered by ankerite (limestone containing iron). b/	Both open-pit and underground operations are used. The 1954 production capacity is to be doubled by 1957 as a result of surface-stripping and shaft-sinking work now in progress. c/	Nearby processing plant now under construction. Upon completion this plant will equalize the iron and flux content of Rudabanya ores and classify them to uniform size. Barium will be extracted from the gangue. d/
	Pecs Area $46^{\circ}09'$ N - $18^{\circ}25'$ E	Limited	Limonite, 32 to 36 percent iron. b/		Present status unknown.	
Manganese ore	Urkut $45^{\circ}05'$ N - $17^{\circ}38'$ E	5 million to 10 million tons (1952) plus 500,000 tons reported discovered 1952-54. e/	18 to 26 percent Mn 14 to 16 percent Fe 0.11 to 0.23 percent P 0.0 to 0.04 percent S 10 to 18 percent SiO_2 6 to 11 percent Al_2O_3 1 to 3 percent Ca 1 to 2 percent MgO 0.3 to 0.5 percent TiO_2 f/	Deposits are of two types. At Ujakna, north of Urkut, ore occurs as bedded deposits in Liassic limestone. Deposits contain two ore-bearing strata. The upper is 0.2 to 0.6 meter thick, separated by about 0.5 meter of marl from the lower which is 1.5 to 3.2 meters thick. The second type of deposit is found on the western slopes of Csardahegy Mountains, about 1 kilometer east of Urkut. The deposits are pockets in reddish colored Liassic limestone. Psilomelane is the principal ore mineral with small amounts of pyrolusite. g/	Both open-pit and underground operations are used, the latter consisting of 2 perpendicular shafts 90 to 150 meters long and 1 inclined shaft 220 meters long; galleries are 100 meters long with slope of 11 degrees. Ore breaking is done by pneumatic hammers. The labor force numbers approximately 1,000; 2 shifts on the surface and 3 shifts below. h/	The nearby "Trommel" washing plant has a capacity of 32 tons of crude ore per hour. The ratio of raw ore to concentrates (34 to 40 percent Mn.) about 3 to 1. Hydrocyclones for reprocessing tailings installed in 1953. Nearby dam provides water for the ore washing plant and electric power. i/

* Footnotes for Table 9 follow on p. 41.

Table 9
(Continued)

Mineral	Location (Coordinates)	Estimated Reserves (Metric Tons)	Mineral Content	Geology	Mining Operations	Processing
		Carbonate ore: 30 million to 50 million tons reported discovered, 1952-54. j/	23 to 30 percent Mn 4 to 6 percent Fe 6 to 25 percent SiO_2 k/	The ore is 13 to 35 meters thick and consists of rhodochrosite and oligonite irregularly deposited to the depth of 280 meters. l/		Calcining plant reportedly under construction. m/
	Epleny 47°13' N - 17°55' E	Original reserves were depleted in 1954; 300,000 tons new reserves reported, 1953-54. n/	Original reserves: 20 to 28 percent Mn 5 to 10 percent Fe 20 to 27 percent SiO_2 Iron content of new reserves may be larger. o/	The ore occurs as a bedded deposit in liassic limestone. The deposit dips to the north. The average thickness is about 1 meter but in places reaches 3 meters; the principal ore minerals are psilomelane and pyrolusite with small amounts of manganite, braunite, and polianite. The ore occurs as nodules of greatly varying sizes in a clay matrix. p/	Development consists of 1 inclined shaft, 1 perpendicular shaft, and small surface workings. Pneumatic hammers used to break down the ore. The labor force consists of 120 people on 3 shifts. q/	Shipped as run-of-the-mine.
	Bukk Mountain 48°04' N - 20°35' E	6,000,000 tons -- not of industrial importance. r/		Prospecting evidence indicates approximately 6 million tons low-grade manganese ore present in deposits near Poszvaj, Eger, and Daujen. At Eger the ore-bearing formation is about 4 meters thick. The deposit contains 2 ore beds, the upper about 0.9 meter thick, the lower about 1.3 meters thick. The ore is low grade, ranging from 8.33 to 21.70 percent Mn. s/		

a. 105/
b. 106/
c. 107/
d. 108/
e. 109/
f. 110/
g. 111/
h. 112/
i. 113/
j. 114/
k. 115/
l. 116/
m. 117/
n. 118/
o. 119/
p. 120/
q. 121/
r. 122/
s. 123/

Approved For Release 1999/09/02 : CIA-RDP79-01093A001200020009-5

APPENDIX C

STATISTICAL TABLES

Table 10

Planned Production of Iron and Steel in Hungary
1947-56 and 1960

Thousand Metric Tons

Year	Pig Iron	Crude Steel	Rolled Products
1947	360 a/	600 a/	360 a/
1948	390 a/	745 a/	400 a/
1949	430 a/	800 a/	450 a/
1950	400 b/	800 to 840 b/	600 b/
1951	400 b/	900 b/	650 b/
1952	500 b/	1,000 b/	650 b/
1953	650 b/	1,200 b/	800 b/
1954 (1949 Plan)	950 b/	1,600 b/	1,100 b/
(1951 Revision)	1,280 c/	2,200 c/	N.A.
(1953 Revision)	860 c/	1,680 c/	N.A.
1955	N.A.	N.A.	N.A.
1956	N.A.	N.A.	930 d/
1960	1,410 e/	2,240 e/	1,400 e/

a. 124/
b. 125/
c. 126/
d. 127/
e. 128/

Approved For Release 1999/09/02 : CIA-RDP79-01093A001200020009-5

Table 11

Locations and Estimated Capacities of Blast Furnaces in Hungary a/
1956

Plant Name and Location	Blast Furnaces: Number	Blast Furnaces: Daily Capacity, Each (Metric Tons)	Estimated Annual Capacity b/ (Thousand Metric Tons)
Lenin Metallurgical Works, Diosgyor ($48^{\circ}06'$ N - $20^{\circ}21'$ E)	1	200	68.0
	1	180	61.2
	1	500	170.0
Subtotal			299.2
Ozd Iron and Steel Plant, Ozd ($48^{\circ}13'$ N - $20^{\circ}18'$ E)	2	180 to 200 c/	122.4 to 136.0
	3	250	255.0
Subtotal			377.4 to 391.0
Sztalinvaros Metallurgical Combine, Sztalinvaros ($46^{\circ}58'$ N - $18^{\circ}46'$ E)	1	500	170.0
Total			846.6 to 860.2

a. Based on information from detailed plant studies available in CIA files.
b. Estimate based on US practice of each furnace operating an average of 340 days per year.
c. One of these two blast furnaces produces pig iron and ferromanganese. Pig iron capacity is estimated at 31,000 to 35,000 tons.

Table 12

Locations and Estimated Capacities of Steelmaking Furnaces in Hungary a/*
1956

Plant Name and Location	Steelmaking Furnaces: Number	Type	Daily Capacity, Each (Metric Tons)	Number of Heats Per Day	Estimated Annual Steel Capacity b/ (Thousand Metric Tons)
Lenin Metallurgical Works, Diosgyor (48°06' N - 20°41' E)	3	Open hearth	40	3	117.0
	1	Open hearth	70	3	68.2
	2	Open hearth	80	2.5	130.0
	1	Open hearth	180	2	117.0
	1	Electric	2		2.0
	1	Electric	3		3.0
	1	Electric	6		6.0
	2	Electric	10		20.0
Subtotal					463.2
Ozd Iron and Steel Plant, Ozd (48°13' N - 20°18' E)	11	Open hearth	35 to 40	3	375.1 to 429.0
	1	Open hearth	35	3	34.1
Subtotal					409.2 to 463.1

* Footnotes for Table 12 follow on p. 50.

Approved For Release 1999/09/02 : CIA-RDP79-01093A001200020009-5

Table 12

Locations and Estimated Capacities of Steelmaking Furnaces in Hungary a/
1956
(Continued)

Plant Name and Location	Steelmaking Furnaces: Number	Steelmaking Furnaces: Type	Steelmaking Furnaces: Daily Capacity, Each (Metric Tons)	Number of Heats Per Day	Estimated Annual Steel Capacity b/ (Thousand Metric Tons)
Matyas Rakosi Metallurgical Trust, Csepel (47°25' N - 19°15' E) c/	4	Open hearth	35 c/	3 to 4	136.4 to 182.0
	1	Open hearth	40 c/	3 to 4	39.0 to 52.0
	1	Electric	3		3.0
	1	Electric	5		5.0
	2	Electric	6		12.0
	1	Electric	9		9.0
Subtotal					204.4 to 263.0
Sztalinvaros Metallurgical Combine, Sztalinvaros (46°58' N - 18°46' E)	3 d/	Open hearth	125	N.A.	300.0
	N.A.	Electric	N.A.		N.A.
Subtotal					300.0

Table 12

Locations and Estimated Capacities of Steelmaking Furnaces in Hungary a/
1956
(Continued)

Plant Name and Location	Steelmaking Furnaces: Number	Steelmaking Furnaces: Type	Steelmaking Furnaces: Daily Capacity, Each (Metric Tons)	Number of Heats Per Day	Estimated Annual Steel Capacity b/ (Thousand Metric Tons)
Wilhelm Pieck Railroad Car and Machine Works, Gyor (47°41' N - 18°38' E)	2	Open hearth	Small	N.A.	2.0
	1	Electric	4		4.0
	1	Electric	1		1.0
	2	Electric	2		4.0
Subtotal					11.0
Red Star Tractor Works, Kispest (47°27' N - 19°18' E)	2	Open hearth	Small	N.A.	9.7
		Electric	3		6.0
Subtotal					15.7
Borosodnadasd Rolling Mill, Borosodnadasd (48°08' N - 20°15' E)	2	Electric	1.5		3.0

Approved For Release 1999/09/02 : CIA-RDP79-01093A001200020009-5

Table 12

Locations and Estimated Capacities of Steelmaking Furnaces in Hungary a/
1956
(Continued)

Plant Name and Location	Steelmaking Furnaces: Number	Steelmaking Furnaces: Type	Steelmaking Furnaces: Daily Capacity, Each (Metric Tons)	Number of Heats Per Day	Estimated Annual Steel Capacity b/ (Thousand Metric Tons)
Gheorghiu Dej Shipyard, Budapest (47°30' N - 19°05' E)	N.A.	Electric	N.A.		N.A.
Ganz Railroad Car and Machine Factory, Kobanya (47°28' N - 19°09' E)	1	Electric	3		3.0
	1	Electric	8		8.0
Subtotal					11.0
Kobanya Iron and Steel Foundry, Kobanya (47°28' N - 19°09' E)	2	Electric	N.A.		N.A.
Lang Engineering Works, Budapest (47°30' N - 19°05' E)	N.A.	Electric	N.A.		20.0 e/
Salgotarjan Steel Goods Factory, Salgotarjan (48°07' N - 19°48' E)	N.A.	Electric	N.A.		N.A.

Approved For Release 1999/09/02 : CIA-RDP79-01093A001200020009-5

Table 12

Locations and Estimated Capacities of Steelmaking Furnaces in Hungary a/
1956
(Continued)

Plant Name and Location	Steelmaking Furnaces: Number	Steelmaking Furnaces: Type	Steelmaking Furnaces: Daily Capacity, Each (Metric Tons)	Number of Heats Per Day	Estimated Annual Steel Capacity b/ (Thousand Metric Tons)
Soroksar Iron and Steel Foundry, Soroksar (47°24' N - 19°07' E)	N.A.	Electric	N.A.		N.A.
Total					1,437.5 to 1,600.0 f/

a. Based on information from detailed plant studies available in CIA files.
b. Open hearth capacities based on US practice of number of heats per furnace per day, operating 325 days per year.
c. Information indicates that these furnaces melt 3 to 4 heats per day.
d. No. 3 open hearth furnace at Sztalinvaros went into operation 21 April 1956.
e. The planned production is 30,000 tons. This amount is included in the total production capacity.
f. Allowance of 50,000 tons is made for furnaces of unknown size.

Approved For Release 1999/09/02 : CIA-RDP79-01093A001200020009-5

Table 13

Facilities for Producing Finished Steel in Hungary a/
1956

Plant Name and Location b/	Type of Finishing Facility
Borosodnadasd Rolling Mill, Borosodnadasd (48°08' N - 20°15' E)	Sheet mill
Lenin Metallurgical Works, Diosgyor (48°06' N - 20°41' E)	Blooming mill Billet and structural mill Universal mill Bar mill Medium structural and rail mill
Lorinci Rolling Mill, Pestszentlorinc (47°26' N - 19°12' E)	3-high heavy plate mill
Ozd Iron and Steel Plant, Ozd (48°13' N - 20°18' E)	Blooming mill Structural and rail mill Plate mill Medium rolling mill Fine rolling mill Wire mill Hoop mill Steel foundry
Matyas Rakosi Metallurgical Trust, Csepel (47°25' N - 19°05' E)	Blooming and structural mill 3-high bar mill Plate mill Two pipe and tube mills Two steel foundries Forge shop

a. Information from detailed plant studies on file CIA.

Table 13

Facilities for Producing Finished Steel in Hungary
1956
(Continued)

Plant Name and Location b/	Type of Finishing Facility
Salgotarjan Steel Goods Factory, Salgotarjan (48°07' N - 19°48' E)	Wire drawing mill Nail shop Galvanizing shop Steel foundry Forge shop

b. In addition to the plants listed in this table, steel foundries are located in the following places:

Ganz Railroad Car and Machine Factory, Kobanya
Gheorgiu Dej Shipyard, Budapest
Kobanya Iron and Steel Foundry, Kobanya
Lang Engineering Works, Budapest
Wilhelm Pieck Railroad Car and Machine Works, Gyor
Red Star Tractor Works, Kispest
Sztalinvaros Metallurgical Combine, Sztalinvaros
Soroksar Iron and Steel Foundry, Soroksar

Table 14

Prices of Raw Materials and Iron and Steel Products in Hungary and the US
1 January 1956

Hungary a/*		US b/	
Product	Forints per Metric Ton c/	Product	US $ per Metric Ton
Iron Ore		Iron Ore	
Bulgarian Magnetic (45 to 55 percent Fe)	210.0		
Soviet	152.0	(Mesabi)	12.12
		(Open hearth lump)	13.23
Hungarian			
30 to 35 percent Fe and Mn	52.35		
35 to 40 percent Fe and Mn	62.70		
Over 40 percent Fe and Mn	74.40		
Czechoslovak	137.0		
Manganese Ore		Manganese Ore	
14 to 17 percent Mn	38.15		
17 to 20 percent Mn	45.05		
20 to 23 percent Mn	51.95		
23 to 26 percent Mn	58.85		
26 to 29 percent Mn	65.75		
29 to 32 percent Mn	72.65		
Over 32 percent Mn	76.10	46 percent Mn	43.70
Chromite		Chromite	
Albanian ore, 40 percent Cr_2O_3	700.00	South African	
		44 percent Cr	20.00
Wolfram	22,500.00	Wolfram	
		Scheelite, domestic	66.15
		Wolframite, imported	33.10
Molybdenum	21,300.00	Molybdenum	1,325.00

* Footnotes for Table 14 follow on p. 56.

Approved For Release 1999/09/02 : CIA-RDP79-01093A001200020009-5

Table 14

Prices of Raw Materials and Iron and Steel Products in Hungary and the US
1 January 1956
(Continued)

Hungary a/		US b/	
Product	Forints per Metric Ton c/	Product	US $ per Metric Ton
Ferromanganese		Ferromanganese	
Carbon Rich	1,238.00		
40 to 50 percent Mn, 8 percent C	1,513.00		
60 to 65 percent Mn, 7 percent C	1,719.00		
65 to 70 percent Mn, 7 percent C	1,857.00		
70 to 80 percent Mn, 7 percent C	2,063.00	74 to 76 percent Mn, 7 percent C	226.00
Ferrochrome		Ferrochrome	
60 percent Cr, 4 percent C	4,500.00	60 percent Cr, high C	347.00
60 to 65 percent Cr, 0.15 percent C	5,188.00	67 to 71 percent Cr, 0.15 percent C	544.00
Ferrotungsten		Ferrotungsten	
65 to 70 percent W, maximum 0.8 percent C	31,725.00	70 percent W	5,248.00
Ferrovanadium		Ferrovanadium	
35 to 40 percent V, 1 percent C	30,225.00	50 to 55 percent V, 3 percent C maximum	3,760.00
Ferrotitanium		Ferrotitanium	
18 to 20 percent Ti, 1 percent C	7,809.00	17 to 21 percent Ti, 2 to 4 percent C	215.00
40 percent Ti, 1 percent C	16,440.00	38 to 40 percent Ti, low C	1,190.00
Ferromolybdenum		Ferromolybdenum	
55 to 60 percent Mo, 5 percent C	20,298.00	55 percent Mo	1,770.00
Ferroboron		Borosil	
2.5 to 5 percent B	34,000.00	3 to 4 percent B, 40 to 45 percent Si	346.50
Ferrosilicon		Ferrosilicon	
15 percent Si	600.00		
25 percent Si	1,050.00	25 to 30 percent Si	110.00
45 percent Si	1,980.00	50 percent Si	140.00
75 percent Si	3,750.00	75 percent Si	254.00
90 percent Si	4,960.00	90 percent Si	367.00

Table 14

Prices of Raw Materials and Iron and Steel Products in Hungary and the US
1 January 1956
(Continued)

Hungary a/		US b/	
Product	Forints per Metric Ton c/	Product	US $ per Metric Ton
Ferrophosphorous		Ferrophosphorous	
16 to 20 percent P	1,296.00		
20 to 30 percent P	1,800.00	23 to 25 percent P	90.00
Pig iron for steel	760.00	Pig iron for steel	65.00
Steel ingots, carbon	910.00	Steel ingots, carbon	72.10
Blooms, carbon	1,053.00	Blooms, carbon	75.00
Slabs, carbon	1,170.00	Slabs, carbon	75.00
Bars		Bars	
Hot rolled rounds and squares, 50 millimeters	1,300.00	Hot rolled, no dimensions	102.53
Reinforcing, 25 millimeters	1,445.00	Reinforcing, no dimensions	102.53
Wire		Wire	
Hot rolled, unalloyed, 10 millimeters	1,350.00	Hot rolled, unalloyed	163.17
Rails		Rails	104.18
Hot rolled, 50 kilograms per meter	1,740.00		
Tubes, seamless, gas and steam		Tubes, seamless, gas and steam	
2-inch over-all diameter	1,220.00	2-inch over-all diameter	221.70
4-inch over-all diameter	3,050.00	4-inch over-all diameter	220.70
Sheet		Sheet	
Hot rolled, 2.75 x 1,500 x 3,000 millimeters	1,970.00	Hot rolled, no dimensions	95.36
Cold rolled, 2.75 x 1,000 x 2,000 millimeters	3,050.00	Cold rolled, no dimensions	117.41
Hot rolled, galvanized, 2.75 x 1,250 x 2,500 millimeters	2,760.00	Hot rolled, galvanized, no dimensions	129.00

Table 14

Prices of Raw Materials and Iron and Steel Products in Hungary and the US
1 January 1956
(Continued)

Hungary a/		US b/	
Product	Forints per Metric Ton c/	Product	US $ per Metric Ton
Strip		Strip	
Hot rolled, 150 millimeters wide x 4 millimeters thick	1,880.00	Hot rolled, no dimensions	95.36
Cold rolled, 150 millimeters wide x 4 millimeters thick	2,770.00	Cold rolled, no dimensions	137.80
Cold rolled, commercial, 120 millimeters wide x 1.6 millimeters thick	5,750.00	N.A.	N.A.

a. 129/
b. US prices are base prices only, do not include extras, and do not represent the actual price paid for the product by the consumer.
c. This is the net producers' price: that is, net price without the turnover taxes.

Approved For Release 1999/09/02 : CIA-RDP79-01093A001200020009-5

Table 15

The Forint/Dollar Ratio in the Ferrous Metallurgical Industry in Hungary
1 January 1956

	Forint/Dollar Ratio
Raw materials	
Soviet iron ore	12.0
Molybdenum	16.1
Chromite (Albanian ore, 42 percent Cr_2O_3)	35.0
Pig iron for steel	12.0
Ferroalloys	
Ferrotungsten, 65 to 70 percent W, 0.8 percent C	6.0
Ferromanganese, 70 to 80 percent Mn, 7 percent C	9.1
Ferrosilicon, 25 percent Si	9.5
Ferrochrome, 60 to 65 percent Cr, 0.15 percent C	9.5
Ferromolybdenum, 55 to 60 percent Mo, 0.5 percent C	11.5
Ferrochrome, 60 percent Cr, 4 percent C	13.0
Ferrosilicon, 90 percent Si	13.5
Ferrotitanium, 40 percent Ti, 1 percent C	13.8
Ferrosilicon, 45 percent Si	14.1
Ferrosilicon, 75 percent Si	14.8
Ferrophosphorous, 20 to 32 percent P	20.0
Ferrotitanium, 18 to 20 percent Ti, 1 percent C	36.3

Approved For Release 1999/09/02 : CIA-RDP79-01093A001200020009-5

Table 15

The Forint/Dollar Ratio in the Ferrous Metallurgical Industry in Hungary
1 January 1956
(Continued)

	Forint/Dollar Ratio
Steel ingots, carbon	12.6
Semifinished steel	
Blooms, carbon	14.0
Slabs, carbon	15.5
Semifinished steel average	14.7
Finished steel	
Bars, hot rolled, round or square, 50 millimeters	12.7
Tubes, seamless, gas and steam, 4-inch over-all diameter	13.8
Bars, reinforcing, 25 millimeters	14.1
Rails, hot rolled, 50 kilograms per meter	16.7
Strip, hot rolled, 150 millimeters wide x 4 millimeters thick	19.7
Strip, cold rolled, 150 millimeters wide x 4 millimeters thick	20.1
Sheet, hot rolled, 2.75 x 1,500 x 3,000 millimeters	20.6
Sheet, hot rolled, galvanized, 2.75 x 1,250 x 2,500 millimeters	21.4
Sheet, cold rolled, 2.75 x 1,000 x 2,000 millimeters	26.0

Approved For Release 1999/09/02 : CIA-RDP79-01093A001200020009-5

Table 16

Estimated Supply and Consumption of Manganese Ore and Concentrates in Hungary
1946-55

Metric Tons

Year	Total Production: Ores and Concentrates	Total Production: Metallic Content	Apparent Consumption of Metallic Manganese: Pig Iron a/	Apparent Consumption of Metallic Manganese: Steel b/	Apparent Amount Available for Reserves and Export: Metallic Content	Apparent Amount Available for Reserves and Export: Concentrates c/
1946	18,900	7,320	3,035	2,605	1,680	4,200
1947	40,400	15,330	7,360	4,460	3,510	8,775
1948	60,100	21,640	9,215	5,580	6,845	17,112 d/
1949	58,000	21,590	8,000	5,765	7,825	19,562 d/
1950	66,600	24,360	6,505	6,135	11,720	29,300 d/
1951	78,000	30,000	6,505	6,320	17,175	42,937
1952	92,700	34,360	10,810	7,065	16,485	41,212
1953	93,000	34,440	15,265	8,180	10,995	27,487
1954	71,000	24,800	15,265	7,030	2,505	6,262
1955	110,000	40,400	14,045	7,435	18,920	47,300

a. Figures represent input of metallic manganese in the form of 30 percent Mn ore. The manganese content of pig iron is 2.8 percent.

b. Figures represent input of metallic manganese in the form of ferromanganese made from 40 percent Mn concentrates.

c. Only concentrates are exported; amounts shown are based on an assumed metallic content of 40 percent and derived by dividing estimated tons of metallic content by 0.4.

d. Known exports in 1948: Austria, 10,000 tons; East Germany, 1,200 tons. Known exports in 1949: East Germany, 1,200 tons; Italy, 5,000 tons. Known exports in 1951: Austria, 5,600 tons; East Germany, 2,000 tons; Italy, 1,800 tons.

Table 17

Imports and Production of Alloying Materials in Hungary
1938 and 1946-55

Metric Tons

Year	Nickel Imports	Chromite Imports	Ferrochromium (60 to 70 Percent Cr) Imports	Ferromanganese (70 Percent Mn) Production	Ferromanganese (70 Percent Mn) Imports	Ferrosilicon Production (45 Percent Si)	Ferrosilicon Imports (75 to 90 Percent Si)
1938	418 a/	1,400 a/	N.A.	N.A.	3,980 a/	2,600 b/	0
1946	34 a/	N.A.	211 a/	1,534 a/	425 a/	0	31 a/
1947	65 a/	N.A.	136 a/	5,022 a/	309 a/	743 c/	912 a/
1948	126 a/	N.A.	180 d/	6,637 a/	82 a/	750 c/	800 d/
1949	172 a/	3,452 e/	500 f/	7,141 a/	5,000 f/	1,500 g/	800 h/
1950	220 a/	2,769 h/	900 i/	8,765 j/	Insignificant	810 g/	500 k/
1951	250 k/	7,000 h/	1,000 l/	9,030 j/	Insignificant	810 g/	250 k/
1952	300 m/	15,000 h/	1,000 n/	10,092 j/	Insignificant	1,536 g/	500 h/
1953	350 o/	20,000 h/	1,000 p/	11,687 j/	Insignificant	2,628 g/	200 h/
1954	375 p/	21,000 h/	1,200 n/	10,040 j/	Insignificant	3,500 q/	410 h/
1955	400 p/	21,000 h/	1,200 p/	10,624 j/	Insignificant	3,500 q/	N.A.

a. 130/
b. 131/
c. 132/
d. 133/
e. 134/
f. 135/
g. 136/
h. From numerous documents on file in CIA.
i. 137/
j. The metallic manganese required for steel production was converted to 70 percent Mn.
k. Interpolation.
l. 138/
m. 139/
n. 140/
o. 141/
p. Extrapolation.
q. 142/

Approved For Release 1999/09/02 : CIA-RDP79-01093A001200020009-5

APPENDIX D

METHODOLOGY

Most of the methodology used in this report in reaching conclusions and making estimates has been explained in the text or in the footnotes to tables. Methods not so explained are described below.

1. Estimates of Capacities.

a. Pig Iron.

Daily capacities of blast furnaces generally were available. The daily capacity of each blast furnace was multiplied by 340, the estimated number of operating days per year, to obtain the annual capacity of each furnace for the production of pig iron.

b. Open Hearth Crude Steel.

The capacities of open hearth furnaces for the production of crude steel also generally were known. The number of heats per furnace per day, when not known, and the number of operating days per year were based on open hearth practice in the US. Furnace capacity multiplied by the number of heats per day multiplied by the number of operating days per year gives the estimate of annual crude steel capacity per furnace.

c. Electric Furnace Steel.

Electric furnace steel capacity is based on a factor of 1,000 tons of steel annually per ton of furnace capacity. Experience has shown this factor to be consistently within reason, although production from various types of electric furnace operations fluctuates widely.

2. Manganese Consumption.

Manganese content of pig iron in Hungary averages 2.8 percent, and manganese recovery in the blast furnace is 67 percent.

$$\frac{0.028 \times 1{,}000}{0.67} = 42 \text{ kg metallic manganese required per ton of pig iron}$$

Manganese consumption per ton of steel is assumed to be the same as in other steel producing countries, 5 to 7 kg per ton of steel.

42 kg for pig iron plus 7 kg for steel = 49 kg

3. Cost of Ingots to Finishing Mills.

Planning price of steel ingots	= 910 forints per ton
Apparent over-all yield of rolled section from ingots	= 55 percent
Normal yield of rolled steel in most steel industries	= 72 percent
Planning price per ton of hot rolled bars	= 1,300 forints

$\frac{0.1}{55} \times 910$ = 1,656 forints, cost of steel alone to finishing mills, based on apparent yield

$\frac{0.1}{72} \times 910$ = 1,264 forints, cost of steel alone to finishing mills, based on normal yield

1,656 - 1,300 = 356 forints, cost of steel above planned selling price per ton of hot rolled bars

1,300 - 1,264 = 36 forints, differential between planned selling price of hot rolled bars and cost of ingots alone

$\frac{36}{1,300}$ = 0.0277, or 2.8 percent, of selling price left for costs of conversion

APPENDIX E

GAPS IN INTELLIGENCE

Information on the iron and steel industry of Hungary is fragmentary, inconclusive, and contradictory and does not permit an authoritative analysis of economic strengths and weaknesses of the industry.

Important gaps in intelligence exist on the following:

1. Organization and Administration.

The mining of iron ore is believed to be under the Ministry of Metallurgy and Machine Industry, and the mining of manganese is believed to be under the Ministry of the Chemical Industry and Electricity. Confirmation is desired, and organization charts of the two ministries showing the place of these mining operations is needed.

2. Supply.

Absolute information on the production of iron and steel products released by official Hungarian sources are believed to overstate actual production of the industry, a conclusion that is supported by estimates originating in Budapest and by other intelligence sources. Conclusive evidence of the extent of official overstatement is needed.

The output of rolled products in Hungary, during the past 5 years, averaged approximately 52 percent of the production of crude steel. Depending on the technology of steel processing and the types of products produced, the output of rolled products should range from 70 to 75 percent of the crude steel production. An explanation of the low yield in Hungary is needed.

Little information is available on the production and types of alloy steel produced in Hungary.

The extent of reserves of iron ore is not known.

There are no adequate reports on imports and exports of raw materials, pig iron, crude and alloy steel, or semifinished and finished steel.

A breakdown of finished steel production by type of product is an extremely important gap in intelligence. A distribution pattern showing the amounts of finished steel consumed or allocated to the industries or ministries and to export is a primary requirement.

Detailed information on the final investments of the First Five Year Plan and planned investments for the Second Five Year Plan are needed.

Specific information on the costs of producing raw materials and iron and steel products is lacking.

Production statistics of the individual iron and steel plants are especially weak.

Information on rates of wages in the iron and steel industry is needed.

Approved For Release 1999/09/02 : CIA-RDP79-01093A001200020009-5

APPENDIX F

SOURCE REFERENCES

Information available on the iron and steel industry in Hungary varies considerably in quality and volume.

General background material and fairly detailed information on the history and development of the industry is available in the publication of the British Iron and Steel Federation, Monthly Statistical Bulletin, December 1948. This information is confirmed and supplemented by a number of reports from several sources, principally from the American Legation in Budapest.

The present organization of the Ministry of Metallurgy and Machine Industry, except for the iron ore mining industry, is described reliably by a CIA source and supplemented by other CIA reports which added important details to the basic reports.

Information on the supply position of the ferrous metallurgical industry is particularly poor. Absolute production figures released by the Hungarian government may be overstated. This conclusion is supported by reports from the American Legation in Budapest and other sources, but conclusive information on the extent of official overstatement is not available. The status of supply is complicated further by the serious lack of reports on foreign trade. The information available is spotty and provides no firm basis for estimates.

Technological coverage, largely from publications of the translation services, is excellent where available, but articles on current developments do not appear frequently in Hungarian journals.

Details on investments, costs, and prices in the Hungarian iron and steel industry are lacking. Some documentary reports are available in reports of the translation services, and isolated statements are available in the Hungarian press, from radio broadcasts, and from the American Legation in Budapest. A Radio Free Europe report of the visit of a group of Austrian metallurgists to Hungarian steel plants in early 1956 contains revealing observations on the cost of producing iron and steel products in Hungary.

Numerous reports from all sources on individual iron and steel plants provide reliable descriptions of plants but contain little accurate data on production. Plant consolidations maintained by CIA were invaluable in the preparation of plant studies.

Important details of current developments at the individual steel mills are available through reports of the translation services and the CIA radio monitoring services.

Evaluations, following the classification entry and designated "Eval.," have the following significance:

Source of Information	Information
Doc. - Documentary	1 - Confirmed by other sources
A - Completely reliable	2 - Probably true
B - Usually reliable	3 - Possibly true
C - Fairly reliable	4 - Doubtful
D - Not usually reliable	5 - Probably false
E - Not reliable	6 - Cannot be judged
F - Cannot be judged	

"Documentary" refers to original documents of foreign governments and organizations; copies or translations of such documents by a staff officer; or information extracted from such documents by a staff officer, all of which may carry the field evaluation "Documentary."

Evaluations not otherwise designated are those appearing on the cited document; those designated "RR" are by the author of this report. No "RR" evaluation is given when the author agrees with the evaluation on the cited document.

---

1. USSR, Tsentral'noye Statisticheskoye Upravleniye. Narodnoye khozyaystvo SSSR, statisticheskiy sbornik (National Economy of the USSR, Statistical Handbook), Moscow, 1956. U. Eval. Doc.
25X1A [redacted]
CIA. CIA/RR PR-138, Economic Rehabilitation of North Korea, 1954-56, 25 Apr 56. S.
NIS 39, China, sec 63, 1956. S.
NIS 19, Hungary, sec 63, 1956. S.
UN, ECE. Economic Survey of Europe in 1955, Geneva, 1956. U. Eval. RR 2.
State, Prague. Dsp 275, 16 Feb 56. S. Eval. RR 2.
State, Warsaw. T 386, 16 Dec 55. S. Eval. RR 2.
2. Gt Brit, British Iron and Steel Federation. Monthly Statistical Bulletin, vol 23, no 12, Dec 48, p. 11. U. Eval. RR 1.
3. Ibid.
4. Ibid.
State, Budapest. Hungarian Press Summary, 14 Apr 55, p. 2-6. U. Eval. RR 1.
5. Gt Brit, British Iron and Steel Federation. Monthly Statistical Bulletin (2, above).
6. [redacted]
7.
25X1A
8. State, Budapest. Dsp 652, 15 Mar 51. C. Eval. RR 1.
State, Budapest. Hungarian Press Summary, 11 Apr 51. C. Eval. RR 1.
9. UN, ECE. Economic Survey of Europe in 1954, Geneva, 1955. U. Eval. RR 1.
10. [redacted]
25X1A
State, Budapest. JOINT WEEKA, no 38, 23 Sep 55. C. Eval. RR 2.
11. State, Budapest. Hungarian Press Summary, 27 Apr 56. U. Eval. RR 1.
State, Budapest. Dsp 458, 7 Jun 56. C. Eval. RR 1.
12. New York Times, 6 Jun 54. U. Eval. RR 2.
25X1A [redacted]

STATSPEC [redacted]

25X1A 13. [redacted]
CIA. ORR Project 23-51-III (WP), Economic Organization of Hungary, 10 Feb 53. S. Eval. RR 2.

25X1A [redacted]

14. CIA. FDD Summary no 669, 29 Sep 55. OFF USE. Eval. RR 2.

STATSPEC [redacted]

15. CIA. FDD Summary no 721, 16 Nov 55, p. 70. OFF USE. Eval. RR 3.

16. Ibid.
UN, ECE. Quarterly Bulletin of Steel Statistics for Europe, Jun 55, p. 50-51. U. Eval. RR 3.

17. UN, ECE. Quarterly Bulletin of Steel Statistics for Europe, Jun 55, p. 50-51. U. Eval. RR 3.

18. Gt Brit, British Iron and Steel Federation. Monthly Statistical Bulletin (2, above).

19. UN, ECE. Economic Survey of Europe in 1954 (9, above).

20. Gt Brit, British Iron and Steel Federation. Statistical Yearbook, 1949. U. Eval. RR 1.

21. State, Vienna. Dsp 555, 1 Dec 49. C. Eval. RR 1.
State, Budapest. Dsp 71, 6 Jan 49. S. Eval. RR 1.
State, Budapest. Hungarian Press Summary, 11 Apr 51. S. Eval. RR 1.

25X1A [redacted]

22. CIA. FDD Translation no 608, 13 Nov 56, Hungarian Statistical Handbook. OFF USE. Eval. Doc.

25X1A 23. [redacted]
State, Budapest. Dsp 627, 18 May 52. S. Eval. RR 2.

25X1A [redacted]

24. State, Vienna. Dsp 555, 1 Dec 49. C. Eval. RR 1.
State, Budapest. Dsp 71, 6 Jan 49. S. Eval. RR 1.
State, Budapest. Hungarian Press Summary, 11 Apr 51. S. Eval. RR 1.

25X1A [redacted]

25. UN, ECE. Economic Survey of Europe in 1954 (9, above).

26. State, Budapest. Hungarian Press Summary, 27 Apr 56. U. Eval. RR 1.

27. CIA. FDD Translation no 608 (22, above).

28. State, Budapest. Hungarian Press Summary, 27 Apr 56. U. Eval. RR 1.
Ibid., 11 Feb 56. U. Eval. RR 1.
STATSPEC [redacted]
State, Budapest. Hungarian Press Summary, 2 Nov 55. U. Eval. RR 1.
25X1A 29. [redacted]
State, Budapest. Dsp 627, 18 May 52. S. Eval. RR 2.
25X1A [redacted]
CIA. FDD Summary no 31, 14 Sep 50. S. Eval. RR 2.
25X1A [redacted]
Ibid., IR-317-54, 15 Jan 54, Hungarian Journal of Metallurgy. C. Eval. RR 2.
30. State, Vienna. Dsp 555, 1 Dec 49. C. Eval. RR 1.
State, Budapest. Dsp 71, 6 Jan 49. S. Eval. RR 1.
Ibid., dsp 669, 11 Apr 51. S. Eval. RR 1.
25X1A [redacted]
31. UN, ECE. Economic Survey of Europe in 1954 (9, above).
32. State, Budapest. Hungarian Press Summary, 27 Apr 56. U. Eval. RR 1.
33. CIA. FDD Translation no 608 (22, above).
34. State, Budapest. Hungarian Press Summary, 11 Feb 56. U. Eval. RR 2.
Ibid., 27 Apr 56. U. Eval RR 1.
35. 25X1A [redacted]
36. State, Vienna. Dsp 555, 1 Dec 49. C. Eval. RR 1.
State, Budapest. Dsp 71, 6 Jan 49. S. Eval. RR 1.
Ibid., dsp 669, 11 Apr 51. S. Eval. RR 1.
25X1A [redacted]
37. State, Budapest. Hungarian Press Summary, 27 Apr 56. U. Eval. RR 1.
38. CIA. FDD Translation no 608 (22, above).
39. UN, ECE. Quarterly Bulletin of Steel Statistics for Europe, Jun 55, p. 50-51. U. Eval. RR 3.
STATSPEC [redacted]
25X1A 40. [redacted]
Ibid., R-117-55, 15 Mar 55. C. Eval. RR 1.

41. State, Budapest. T 430, 14 Mar 55. C. Eval. RR 2.
25X1A [redacted]
Ibid., R-117-55, 15 Mar 55. C. Eval. RR 2.
42. CIA. ORR Project 10.804, Recent Economic Developments in the European Satellites (to be published). S.
43. State, Budapest. Hungarian Press Summary, 27 Apr 56. U. Eval. RR 1.
44. State, Budapest. Dsp 489, 11 Feb 53. S. Eval. RR 2.
45. CIA. FDD U-2752, 22 Jan 53, p. 1. S. Eval. RR 2.
25X1A 46. [redacted]
47. CIA. FDD Summary no 819, 13 Feb 56, p. 57. OFF USE. Eval. RR 2.
48. State, Vienna. Dsp 555, 1 Dec 49. C. Eval. RR 1.
49. State, Budapest. Hungarian Press Summary, 27 Apr 56. U. Eval. RR 1.
50. Ibid.
STATSPEC 51. [redacted]
25X1C 52. [redacted]
25X1A 53. 54. [redacted]
55. CIA. FDD Translation no 608 (22, above).
25X1A 56. [redacted]
57. CIA. FDD U-2572, 22 Jan 53, p. 3. S. Eval. RR 2.
58. CIA. CIA/RR PR-94, Manganese in the Soviet Bloc, 19 Jan 55, p. 41. S/US ONLY.
25X1A 59. [redacted]
60. Ibid.
25X1A 61. 62. [redacted]
63. CIA. CIA/RR PR-94 (58, above).
25X1A 64. [redacted]
CIA. CIA/RR PR-94 (58, above), p. 43. S/US ONLY.
65. State, Budapest. Hungarian Press Summary, 7 Jul 55. U. Eval. RR 2.
66. CIA. CIA/RR PR-94 (58, above), p. 44. S/US ONLY.
25X1A 67. [redacted]
68. State, Budapest. Hungarian Press Summary, 27 Apr 56. U. Eval. RR 2.

69. Camp, J.M., and Francis, C.B. <u>The Making, Shaping, and Treating of Steel</u>, Chicago and Pittsburgh, 1940, p. 225. U.. Eval. RR 1.
Air, Budapest. IR-53-52, 7 May 52, p. 3, info Apr 52. C. Eval. RR 2.
70. CIA/RR PR-94 (58, above).
71. <u>Ibid</u>., p. 45. S/US ONLY.
72. <u>Ibid</u>., p. 44. S/US ONLY.
73. State, Budapest. <u>Hungarian Press Summary</u>, 27 Apr 56. U. Eval. RR 1.
STATSPEC [redacted]
74. NIS 19, <u>Hungary</u>, sec 62, Mar 56. S/NOFORN.
75. <u>Ibid</u>.
76. State, Budapest. <u>Hungarian Press Summary</u>, 27 Apr 56. U. Eval. RR 1.
77. [redacted]
STATSPEC
78. [redacted]
25X1A 79. [redacted]
80. NIS 19, <u>Hungary</u>, sec 62, Mar 56, fig 62-10. S/NOFORN.
81. <u>Szabad nep</u>, 3 Jun 55, p. 2. U. Eval. RR 1.
82. US, EDAC. D-36/111, 25 May 56. U. Eval. RR 2.
State, Teheran. Dsp 11, 11 Jul 55, info 4 Jun 55. U. Eval. RR 2.
83. State, Budapest. Dsp 51, 5 Aug 55. S. Eval. RR 2.
25X1A 84. [redacted]
85. State, Budapest. Dsp 561, 12 Mar 52. C. Eval. RR 3.
86. State, Basel. Dsp 80, 9 Apr 54, info Apr 54. C. Eval. RR 2.
25X1A 87. [redacted]
88.
25X1C 89.
25X1A 90.
CIA. FDD Summary no 652, 14 Sep 55. OFF USE. Eval. RR 2.
91. CIA. FDD Summary no 652, 14 Sep 55. OFF USE. Eval. RR 2.
25X1A 92. [redacted]
93.
94.
STATSPEC
95. CIA. FDD Summary no 837, 24 Feb 56. C. Eval. RR 2.

State, Budapest. Hungarian Press Summary, 27 Apr 56. U. Eval. RR 1.

25X1A 96. [redacted]

97. [redacted]

98. [redacted]

STATSPEC

UN, ECE. Economic Bulletin for Europe, vol 7, no 2, Geneva, Aug 55, p. 87. U. Eval. RR 2.

25X1A [redacted]

State, Budapest. Dsp 458, 7 Jun 56. C. Eval. RR 1.

99. State, Budapest. Dsp 458, 7 Jun 56. C. Eval. RR 1.

100. State, Budapest. Hungarian Press Summary, 27 Apr 56. U. Eval. RR 1.

State, Budapest. Dsp 458, 7 Jun 56.. C. Eval. RR 1.

101. CIA. FDD Summary no 865, 20 Mar 56. OFF USE. Eval. RR 2.

102. State, Budapest. Hungarian Press Summary, 27 Apr 56. U. Eval. RR 1.

CIA. FDD Translation no 58/49, 9 Nov 49, Over-All Five Year Plan for Hungarian Metallurgical Industry. S. Eval. Doc.

103. State, Budapest. Hungarian Press Summary, 27 Apr 56. U. Eval. RR 1.

104. CIA. CIA/RR 62, The Iron and Steel Industry of East Germany, 26 Sep 55. S.

105. State, Budapest. Dsp 489, 11 Feb 53. C. Eval. RR 2.

106. CIA. CIA/RR PR-93, Iron Ore in the Soviet Bloc, 25 Jan 55. S/US ONLY.

25X1A 107. [redacted]

STATSPEC 108. [redacted]

109. CIA. CIA/RR PR-94 (58, above).

25X1A 110. [redacted]

111. Interior, US Bureau of Mines. Foreign Minerals Survey of Hungary, vol 2, no 2, May 45, Appendix, p. 12. U. Eval. RR 2.

112. CIA. CIA/RR PR-94 (58, above), p. 43. S/US ONLY.

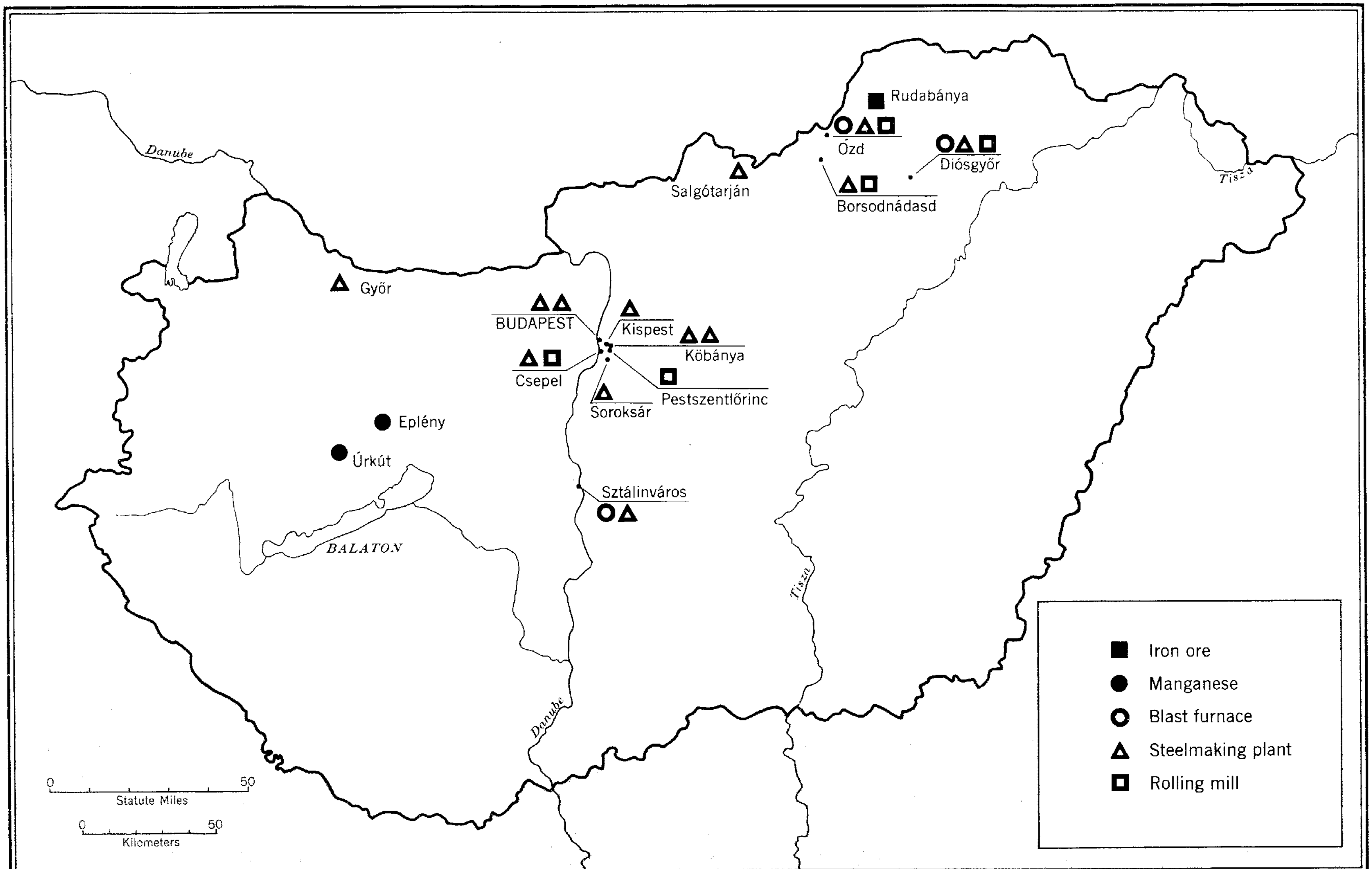
113. [redacted]

25X1A 114. 115. 116. 117.

118. Ibid.

119. Interior, US Bureau of Mines. Foreign Minerals Survey of Hungary (111, above).
25X1A 120. [redacted]
121. Interior, US Bureau of Mines. Foreign Minerals Survey of Hungary (111, above).
122. Ibid.
123. Ibid.
124. Gt Brit, British Iron and Steel Federation. Monthly Statistical Bulletin (2, above).
125. State, Vienna. Dsp 555, 1 Dec 49. C. Eval. RR 1.
State, Budapest. Dsp 71, 6 Jan 49. S. Eval. RR 1.
State, Budapest. Hungarian Press Summary, 11 Apr 51. S. Eval. RR 1.
25X1A [redacted]
126. UN, ECE. Economic Survey of Europe in 1954 (9, above).
127. State. Budapest. Dsp 299, 9 Feb 56. C. Eval. RR 3.
128. State, Budapest. Hungarian Press Summary, 27 Apr 56. U. Eval. RR 1.
25X1A 129. [redacted]
130. Teleki, Geza. The Mineral Raw Materials and Some Basic Industrial Materials of Hungary, Jun 52. U. Eval. RR 2.
131. [redacted]
25X1A 132.
133.
134. Interior, US Bureau of Mines. Mineral Trade Notes, vol 32, no 5, May 51, p. 7. U. Eval. RR 2.
135. [redacted]
25X1A 136.
137.
138.
139. State, Budapest. Dsp 561, 12 Mar 52. C. Eval. RR 2.
140. State, Oslo. Dsp 896, 1 Feb 52. U. Eval. RR 2.
25X1A 141. [redacted]
142. Szabad nep, Budapest, 20 Dec 53. U. Eval. RR 2.

HUNGARY: Iron Ore, Manganese, and Principal Iron and Steel Plants, 1955



25438 6-56

Approved For Release 1999/09/02 : CIA-RDP79-01093A001200020009-5